THE GEOGRAPHIC DISTRIBUTION OF BIG FIVE PERSONALITY TRAITS
Patterns and Profiles of Human Self-Description Across 56 Nations

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The Big Five Inventory (BFI) is a self-report measure designed to assess the high-order personality traits of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. As part of the International Sexuality Description Project, the BFI was translated from English into 28 languages and administered to 17,837 individuals from 56 nations. The resulting cross-cultural data set was used to address three main questions: Does the factor structure of the English BFI fully replicate across cultures? How valid are the BFI trait profiles of individual nations? And how are personality traits distributed throughout the world? The five-dimensional structure was robust across major regions of the world. Trait levels were related in predictable ways to self-esteem, sociosexuality, and national personality profiles. People from the geographic regions of South America and East Asia were significantly different in openness from those inhabiting other world regions. The discussion focuses on limitations of the current data set and important directions for future research.

Keywords: personality traits; cross-cultural psychology; Big Five

Many popular psychological assessment instruments, originally developed in English, have been translated into numerous languages and are now commonly used throughout the world (e.g., Butcher, Lim, & Nezami, 1998; Nichols, Padilla, & Gomez-Maqueo, 2000). Most of these translations were made with an explicit or at least tacit assumption that the core psychological constructs assessed by the measures substantively transcend human

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language and culture. Some researchers have expressed concern with this assumption (F. M. Cheung & Leung, 1998; Misra, 1994; Shweder, 1990) and have questioned whether the uncritical extension of "Western" ways of thinking to the rest of the world should serve as standard practice in psychological science (cf. Church, 2000). Although many of these issues remain unresolved (Triandis, 1997), what seems clear is that when psychological measures are simply translated from their original English and etically imported "as is" into diverse cultures, comparing the assessment results from different cultures becomes highly problematic (Brislin, 1993; van de Vijver, 2000).

PROBLEMS IN COMPARING PERSONALITY TRAIT SCORES ACROSS CULTURES

For psychologists seeking to investigate personality traits across cultures, one of the more vexing problems has centered on whether personality trait scales possess conceptual and functional equivalence across cultures (Brislin, 1993; Lonner, 1979; Triandis, 1994; van de Vijver & Leung, 2000). Particularly troublesome has been establishing whether the mean scores across different cultures show metric or scalar equivalence (Byrne & Campbell, 1999; Little, 2000). That is, when comparing the mean scores of different cultures on a personality trait scale, any observed differences may exist not only because of a real cultural disparity on some personality trait but also because of inappropriate translations, biased sampling, or the non-identical response styles of people from different cultures (Diener & Suh, 2001; Grimm & Church, 1999; van de Vijver, 2000). All of these factors can be difficult to fully control, making some methodologists extremely skeptical about achieving true metric comparability of scores on the same test in different languages or cultures (Heine, Lehman, Peng, & Greenholtz, 2002; Poortinga & van Hemert, 2001; van de Vijver & Leung, 1997). Although much of this skepticism is certainly warranted, new research methods and analysis strategies are emerging that facilitate the comparability of cross-cultural personality data (Allen & Walsh, 2000; G. M. Cheung & Rensvold, 2000; Church & Lonner, 1998).

Among the more common methods for establishing the cross-cultural comparability of personality trait measures is to first show that the trait scales contained in the measures are internally reliable across all targeted languages and cultures. A second frequently employed technique is to demonstrate a high degree of factorial structure invariance across different linguistic and cultural contexts (e.g., Caprara, Barbaranelli, Bermudez, Maslach, & Ruch, 2000). Third, functional equivalence can be demonstrated by showing the trait scales relate to external variables in similar ways. Finally, metric equivalence can be established through differential item functioning analysis and bilingual administrations (Ramirez-Esparza, Gosling, Benet-Martinez, Potter, & Pennebaker, 2006). In all instances, if psychometric problems are identified with particular scale items or constructs, new items or translations are sometimes implemented to improve the comparability of measures (Brislin, 1986; van de Vijver, 2000). Historically, if trait scales from a personality measure showed high internal reliability, invariant factor structure, similar external correlates, and item equivalence across different languages and cultures, comparing the mean scores across cultures was often deemed a reasonable next step (see Steel & Ones, 2002; van de Vijver & Leung, 2001). However, even with evidence of reliability, factor invariance, correlational similarity, and item equivalence, problems can remain in how to metrically interpret mean-level differences in personality traits across cultures (Byrne & Campbell, 1999; Heine et al., 2002; Little, 2000).

Another way to increase confidence in the cross-cultural comparability of personality measures is to show that the mean levels of different assessment instruments intended to measure the same construct, or approximately the same construct, are highly correlated

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across multiple languages or cultures. For example, if two conceptually similar personality trait scales are used in a large number of different cultures, a positive association between the mean levels of those trait scales across the broad set of cultures would provide evidence that both measures are tapping the same underlying construct (Campbell & Fiske, 1959; Cronbach & Meehl, 1955; Messick, 1995). Of course, to analyze the comparability of personality measures using this cross-cultural convergent validation strategy, large numbers of cultures must be studied using conceptually similar measures of personality.

Until recently, this potentially powerful method of cross-cultural or cross-language measurement validation was rarely employed, mainly because few worldwide personality data sets have been available for statistically meaningful comparisons to be made. Most large-scale studies of psychological attributes have been primarily interested in social attitudes and values, not in stable and enduring personality dispositions. A few items included in these worldwide studies may have some relevance for the measurement of personality traits. For example, several items of Hofstede's (2001) study of work-related values are interpretable as indicators of dispositions toward anxiety or neuroticism (Hofstede & McCrae, 2004). The World Values Survey, covering 65 countries representing more than 75% of the world's population, contains items (e.g., "Most people can be trusted.") that are somewhat similar to those by which personality psychologists usually measure agreeable tendencies toward other people (Inglehart & Baker, 2000). Still, studies using full personality trait scales in large numbers of languages and cultures have been heretofore quite rare.

PREVIOUS LARGE-SCALE STUDIES OF PERSONALITY TRAITS ACROSS CULTURES

One of the first comprehensive personality trait measures to enjoy worldwide popularity and a fairly large number of translations into different languages is Eysenck's Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975). In 1984, mean-level trait scores from 25 countries were made available (Barrett & Eysenck, 1984). Ten years later, the number of countries in which three broad personality traits—neuroticism, extraversion, and psychoticism—were measured by the EPQ was expanded to 37 (Lynn & Martin, 1995). In both published reports, the internal reliability and factorial structure of the EPQ across languages and cultures appeared psychometrically sound. However, because no other large personality data sets were available for comparison, it remained unclear as to whether mean-level differences in EPQ scores across cultures converged with other similar measures. Again, such cross-cultural construct validity evidence would have made it more likely that national differences in personality as measured by the three broad trait scales of the EPQ were because of real cultural disparities and not some other biasing factors.

During the past few decades, many personality psychologists, especially those influenced by the lexical approach to person description (De Raad, 2000; Digman, 1990; Goldberg, 1982), have come to view personality traits in terms of five comprehensive dimensions, popularly known as the "Big Five" of human personality (see Goldberg, 1990; John, 1990). The idea that five dimensions can provide a useful framework for describing higher-order differences between individuals has, according to many (see McCrae & Costa, 1999; Wiggins & Trapnell, 1997), reached something of a consensus among personality trait psychologists (cf. Peabody & De Raad, 2002). The Big Five dimensions of personality includes two traits very similar to traits from the EPQ: Extraversion (sometimes called surgency), which is the degree to which one is active, assertive, talkative, and so forth (see Ashton, Lee, & Paunonen, 2002; Lucas, Diener, Grob, Suh, & Shao, 2000;

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Watson & Clark, 1997), and Neuroticism (vs. Emotional Stability), which is the degree to which one is anxious, depressed, irritable, and so forth (see Costa & Widiger, 1994). The Big Five framework also includes three additional descriptive dimensions: Agreeableness (whether one is generous, gentle, kind, etc.; see Graziano & Eisenberg, 1997), Conscientiousness (whether one is dutiful, organized, reliable, etc.; see Hogan & Ones, 1997), and Openness to Experience or Culture/Intellect (whether one is creative, imaginative, introspective, etc.; McCrae & Costa, 1997).

In addition to being considered as merely descriptive dimensions, the Big Five traits have also been viewed as causal dispositions within a framework called the five-factor model (FFM) of personality (Costa & McCrae, 1992). The FFM conceptualizes each of the major dimensions of personality in a slightly different manner than does the Big Five, with each of the five broad dimensions composed of six specific facets or subtraits of personality. Despite some differences between the Big Five and the FFM, both perspectives contain trait dimensions that are conceptually very similar to the EPQ traits, providing a unique opportunity for the cross-cultural validation of personality trait concepts.

The most comprehensive instrument thus far designed to measure the Big Five or FFM is the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992). Recently, the NEO-PI-R was translated into many different languages and administered to samples from more than two dozen countries. In 2001, NEO-PI-R data from 26 countries or cultural regions became available for the research community (McCrae, 2001), and the database was soon expanded by 10 additional cultures covering five major language families: Indo-European, Uralic, Altaic, Dravidian, and Sino-Tibetian (McCrae, 2002). In every culture and language that has been studied, the trait scales of the NEO-PI-R have displayed adequate levels of internal reliability, and the factorial structure of the NEO-PI-R has been considered robust (McCrae, 2001, 2002).

Direct comparisons of the NEO-PI-R to the EPQ have suggested that translations of both instruments provide reasonably comparable estimates of mean levels of Extraversion and Neuroticism across cultures. For example, the mean-level scores of extraversion as measured by the NEO-PI-R and the EPQ were significantly correlated across 18 nations, $r(16) = .51$, $p < .05$ (McCrae, 2002). Thus, if a nation scored relatively high on the EPQ Extraversion scale, it was likely to score high on the NEO-PI-R Extraversion scale as well. These empirical findings, though limited to 18 cultural regions, can be taken as supportive evidence that the Big Five dimension of Extraversion can be comparably measured across human languages and cultures (see also Goldberg, 1990; Lucas et al., 2000), and it provides an indication that the NEO-PI-R may be useful for contrasting and comparing cultural levels of extraversion (though see Poortinga, Van de Vijver, & Van Hemert, 2002).

THE PATTERNED DISTRIBUTION OF PERSONALITY TRAITS ACROSS NATIONS AND WORLD REGIONS

Another indicator that mean levels of personality trait scores are comparable is that the differences across cultures demonstrate a systematic pattern of distribution. Although the translation quality of the NEO-PI-R varied considerably (McCrae, 2001) and some of the studied cultures were represented by very small (fewer than 100) and convenient (e.g., only college students) samples, the NEO-PI-R data set provided strong and reliable evidence that the mean-level trait scores for different cultures produced meaningful patterns. Namely, the mean-level personality trait scores were predictably related to other culture-level indicators, such as

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Hofstede's dimensions of culture (Hofstede & McCrae, 2004; McCrae, 2001), and both instruments, the EPQ and the NEO-PI-R, demonstrated that personality traits are systematically related to external socioeconomic variables such as economic prosperity (Lynn & Martin, 1995; McCrae, 2001, 2002).

In addition, the distribution of personality traits in geographic space seemed to have regular, systematic patterns. Neighboring countries tended to have, as a rule, similar personality means, and regions separated geographically or historically had less similar means on personality trait scales (Allik & McCrae, 2004). Costa, Terracciano, and McCrae (2001) reported that gender differences in personality traits demonstrated a geographically ordered pattern, with the smallest gender differences evident among Asian and African cultures and the largest gender differences found in Europe. In addition to mean differences, standard deviations revealed a similar geographic pattern: Asian and African cultures were characterized by a relatively smaller variability than were European and American cultures, where heterogeneity of personality traits was the largest (McCrae, 2002). All these observations support the position that comparing mean levels of personality traits across cultures can be a legitimate enterprise and further suggest that mean levels of personality traits may prove a useful tool in understanding the important links between culture and psychology (Church & Lonner, 1998; Levine, 2001; Saucier & Goldberg, 2001).

RATIONALE FOR THE CURRENT INVESTIGATION

Although the NEO-PI-R is perhaps the most elaborate and widely used instrument for measuring the personality traits related to the Big Five, it is only one of a growing family of instruments intended to measure the five broadest dimensions of personality. Another, briefer, measure of these five dimensions is the BFI (Benet-Martínez & John, 1998; John & Srivastava, 1999). Recently, this 44-item self-report inventory was included as part of the International Sexuality Description Project (ISDP). The ISDP was initiated and coordinated by the first author and included convenience samples of around 200 participants from 56 nations (see Schmitt et al., 2002). In addition to the main ISDP focus on sexuality description, the ISDP included the BFI as a measure of personality description. Consequently, to our knowledge the ISDP represents the largest cross-cultural data set of personality trait scores thus far accumulated.

Based on the BFI responses from the ISDP, mean levels of personality traits were made available from 56 nations, 27 of which overlap with the NEO-PI-R's smaller set of cultures. This reasonably large overlapping set of cultures provided a unique opportunity to apply the multimethod-multitrait research strategy (Campbell & Fiske, 1959) to the study of personality at the level of intercultural analysis where each culture is treated as a single subject (for discussion of levels of analysis, see McCrae, 2000). Comparing the BFI to the NEO-PI-R would also, for the first time, allow researchers to examine the self-reported Big Five dimensions of agreeableness, conscientiousness, and openness using this cross-cultural and cross-instrument construct validity technique.

Overall, there were three main goals to this investigation. Our first goal was to evaluate the conceptual equivalence of the BFI across cultures by examining the scale reliability and factor structure of the BFI across the 56 nations of the ISDP. This analysis may help to determine whether the relatively brief BFI may be of special use in future cross-cultural research endeavors. Our second objective was to compare the results of the BFI trait scores with scores from two other large cross-cultural personality databases, those in which the

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NEO-PI-R (McCrae, 2002) and the EPQ (Lynn & Martin, 1995) were used to profile national personalities and other personality-related attributes that have been assessed across cultures. As part of this goal, we hoped to provide a reasonable degree of confidence in the veridicality and metric equivalence of culture-level scores provided by the BFI. Our third goal was to document the worldwide distribution of personality traits as measured by BFI. Because of the large number of diverse cultures in the ISDP, our plan was to extensively document significant deviations in personality traits across the major geographic regions of the globe.

METHOD

SAMPLES

The research reported in this article is a result of the ISDP, a collaborative effort of more than 100 social, behavioral, and biological scientists from 56 nations (Schmitt et al., 2002). As seen in Table 1, these 56 nations were grouped into 10 geographic world regions. The world region of North America included 4,047 individuals sampled from three nations. The nation of Canada was represented by three independent, English-speaking samples from the Canadian provinces of Ontario, Alberta, and British Columbia and by a French-speaking sample from the province of Quebec. The latter sample was administered the ISDP survey as translated and back-translated into French. The translation and back-translation procedures will be addressed later. All Canadian samples were college students who volunteered for the study. Thirteen independent samples were obtained from the United States (n = 2,793). This included at least one sample from the states of New York, Illinois, Kentucky, South Carolina, Florida, Alabama, Texas, New Mexico, Idaho, California, and Hawaii. In the sample from Hawaii, 75% of individuals described themselves as Asian American or Native Hawaiian. The samples from mainland United States consisted of 66% European American (non-Hispanic), 10% African American, 8% Hispanic American, 5% Asian American, 2% Native American, and 9% Other or nondescriptive. The North American world region also included one sample from Mexico. The Mexican sample was composed of general community members who volunteered for the study.

Five cultures from the South American region were included in the ISDP (n = 1,042). This included samples from Peru, Bolivia, Chile, Argentina, and Brazil. As seen in Table 1, all of these samples were composed of college students. All volunteered for the study. The Chilean cultural region included two independent samples; one was not administered surveys containing explicit sexual questions. All South American samples were administered the ISDP survey as translated and back-translated into Spanish, except for the Brazilian sample who completed the survey as translated and back-translated into Portuguese.

Eight cultural regions from Western Europe were represented in the ISDP (n = 2,975). This included one sample each from Finland, the Netherlands, Belgium (Flanders region), France, and Switzerland (German-speaking region). Multiple samples were collected from the United Kingdom, Germany, and Austria. The samples from the United Kingdom, Germany, and Austria included both college students and general community members. Eleven cultural regions from Eastern Europe were represented in the ISDP (n = 2,795). This included one sample each from Estonia, Latvia, Lithuania, Poland, the Czech Republic, Slovakia, Ukraine, Romania, Serbia (Yugoslavia), Croatia, and Slovenia. All Eastern European samples were administered the ISDP survey in their native languages.

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TABLE 1

Sample Sizes, Sampling Type, and Language of Survey Across the 56 Nations of the International Sexuality Description Project

	Sample Size			
Cultural Regions	*Men*	*Women*	*Sample Type*	*Language*
North America				
Canada	373	666	College students	English/French
Mexico	106	109	Community based	Spanish
United States of America	999	1,794	College students	English
South America				
Argentina	110	136	College students	Spanish
Bolivia	92	89	College students	Spanish
Brazil	42	55	College students	Portuguese
Chile	100	212	College students	Spanish
Peru	106	100	College students	Spanish
Western Europe				
Austria	207	260	College/community	German
Belgium (Flanders)	166	356	College students	Dutch (Flemish)
Finland	32	90	Community based	Finnish
France	62	74	College students	French
Germany	294	496	College/community	German
Netherlands	115	126	College students	Dutch
Switzerland	85	129	College students	German
United Kingdom	138	345	College/community	English
Eastern Europe				
Croatia	113	109	College students	Croatian
Czech Republic	106	129	College students	Czech
Estonia	79	109	College students	Estonian
Latvia	90	103	College students	Latvian
Lithuania	47	47	College students	Lithuanian
Poland	309	537	College students	Polish
Romania	123	128	College students	Romanian
Serbia	100	100	College students	Serbian
Slovakia	84	100	College students	Slovak
Slovenia	73	109	College students	Slovenian
Ukraine	100	100	College/community	Ukrainian
Southern Europe				
Cyprus	24	36	College students	Greek
Greece	47	182	College students	Greek
Italy	92	108	College/community	Italian
Malta	133	198	College students	English
Portugal	110	142	College students	Portuguese
Spain	95	178	College students	Spanish
Middle East				
Israel	180	214	College students	Hebrew
Jordan	80	195	College students	Arabic
Lebanon	124	139	College students	English
Turkey	206	206	College/community	Turkish
Africa				
Botswana	97	116	College students	English
Congo, Democratic Republic of the	126	66	College/community	French
Ethiopia	140	100	College/community	English
Morocco	93	89	College students	English

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South Africa	81	81	College students	English
Tanzania, United Republic of	93	43	College students	English
Zimbabwe	100	100	College students	English
Oceania				
Australia	201	288	College/community	English
Fiji and Pacific Islands	81	82	College/community	English
New Zealand	116	158	College students	English
South and Southeast Asia				
Bangladesh	83	62	College students	Bangla
India	100	100	College students	English
Indonesia	55	56	College students	Indonesian
Malaysia	50	91	College students	Malay
Philippines	121	161	College students	English
East Asia				
Hong Kong (China)	100	101	College students	English
Japan	157	102	College students	Japanese
Korea, Republic of	195	295	College students	Korean
Taiwan	116	93	College students	Mandarin

NOTE: Most samples were primarily composed of college students; some included general members of the community. All samples were convenience samples. Further details on sampling methods within each culture are available from the authors.

The ISDP had six cultural regions to represent Southern Europe (n = 1,345), including Portugal, Spain, Italy, Malta, Greece, and Cyprus. The Malta region included two samples of college students. It is important to acknowledge that the placement of cultures into these three European regions may be viewed by some as problematic and certainly that more than three basic regions exist in Europe, including northern, central, and other divisions. However, given the number and geography of nations included in the ISDP, we chose these three divisions to economize our presentation while maintaining genuine regional variation across the European continent (see also Schmitt et al., 2002).

Four cultures from the Middle East world region were included in the ISDP (n = 1,344). This included two samples from Turkey, one composed of college students and the other of general community members. The placement of Turkey in the Middle East region may be viewed as problematic in that Turkey could have been placed into several possible categories, including southeastern Europe, a Mediterranean, or southwestern Asia. However, for comparative purposes using our present geographic groupings, we chose to place Turkey in the Middle East world region. One sample from Lebanon was included; these were college students who volunteered for the study. Two samples from Israel were included; both were composed of college students. One sample from Jordan was included; these were volunteer college students who did not receive the full ISDP survey.

Seven cultural regions from Africa were included in the ISDP (n = 1,325). This included college students from Morocco, the United Republic of Tanzania, Zimbabwe, Botswana, and South Africa. A sample of both college students and community members was accumulated from Ethiopia. All of these samples were administered the ISDP survey in English, and the Moroccan and Ethiopian samples' surveys contained annotated explanations for some of the most difficult words and phrases as identified in pretesting sessions. A seventh African sample containing both college students and community members was accumulated from the Democratic Republic of the Congo. This sample was administered the ISDP survey in French.

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Three cultural regions from Oceania were included in the ISDP ($n = 926$). This included two samples from Australia (one from eastern Australia containing college students and one from western Australia that included both college students and community members), one sample from New Zealand, and one sample from Fiji. The sample from Fiji was collected at the University of the South Pacific, a true regional university. Although a large number of participants were from Fiji, a significant number came from surrounding nations within the Pacific Island region. Consequently, we will refer to this cultural region as the Fiji and Pacific Islands region.

Five cultures from South or Southeast Asia were included in the ISDP ($n = 879$). This included one sample each from India, Bangladesh, Malaysia, Indonesia, and the Philippines. Four cultural regions from East Asia were included ($n = 1{,}159$), one sample each from Hong Kong (now a part of the People's Republic of China), Taiwan (Republic of China), and Japan, and two samples were accumulated from the Republic of (South) Korea. For statistical purposes, the cultures of Taiwan and Hong Kong (China) were kept separate when conducting nation-level analyses.

Overall, this collection of cultural regions represented a diverse array of ethnic, geographic, and linguistic categories. In total, the many cultures of the ISDP represent 6 continents, 13 islands, 29 languages, and 56 nations. Most samples were composed of college students (indicated in Table 1 under the sample type column by "college students" or "college"); some included general members of the community (indicated by "community sample" or "community"). All samples were convenience samples. Most samples were recruited as volunteers, some received course credit for participation, and others received a small monetary reward for their participation. All samples were administered an anonymous self-report survey. Most surveys were returned via sealed envelope or the usage of a drop-box. Return rates for college student samples tended to be relatively high (around 95%), though this number was lower in some cultures. Return rates for community samples were around 50%.

Not all participants received the full ISDP survey in samples from Chile, Jordan, South Africa, Fiji, India, and Bangladesh, though all samples received the BFI measure used in this article. Missing data was a problem in some samples, though this was generally restricted to measures that dealt explicitly with sexual desire and infidelity—topics not addressed in this article. For the BFI, if an individual item was not completed, this resulted in the full trait scale being treated as missing data. Further details on the sampling and assessment procedures within each of the cultural regions are provided elsewhere (Schmitt et al., 2002) and are available from the authors.

PROCEDURE

All collaborators were asked to administer an anonymous, 9-page survey to at least 100 men and 100 women. As seen in Table 1, most national samples reached this approximate sample size of men and women. Some nations, such as the United States and Canada, contained numerous convenience samples, and so the national sample size was much larger than 200. All participants were provided with a brief description of the study, including the following written instructions:

> This questionnaire is entirely voluntary. All your responses will be kept confidential and your personal identity will remain anonymous. No identifying information is requested on this survey, nor will any such information be added later to this survey. If any of the questions make

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> you uncomfortable, feel free not to answer them. You are free to withdraw from this study at any time for any reason. This series of questionnaires should take about 20 minutes to complete. Thank you for your participation.

The full instructional set provided by each collaborator varied, however, and was adapted to fit the specific culture and type of sample. Details on incentives and cover stories used across samples are available from the authors.

MEASURES

Translation procedures. Researchers from nations where English was not the primary language were asked to use a translation and back-translation process and administer the ISDP in their native language. This procedure typically involved the primary collaborator translating the measures into the native language of the participants and then having a second person back-translate the measures into English. Differences between the original English and the back-translation were discussed, and mutual agreements were made as to the most appropriate translation. This etic procedure tries to balance the competing needs of making the translation meaningful and naturally readable to the native participants while preserving the integrity of the original measure and its constructs (Brislin, 1980; Church, 2001). As seen in Table 1, this process resulted in the survey being translated into 29 different languages. Samples from Morocco, Ethiopia, Fiji, the Philippines, and Hong Kong were administered the survey in English, but certain terms and phrases were annotated to clarify what were thought to be confusing words for the participants. The translation of the ISDP survey into the Flemish dialect of Dutch used only a translation procedure, as this involved mainly word variant changes from the original Dutch. In addition, pilot studies were conducted in several testing sites, in part to clarify translation and comprehension concerns.

Demographic measure. Each sample was first presented with a demographic measure entitled Confidential Personal Information. This measure included questions about gender, age, date of birth, weight, height, sexual orientation, current relationship status, socioeconomic status as a child, socioeconomic status now, area raised (rural, urban, suburban), total number of years of education, current religious affiliation, degree of religiosity, ethnic background, and political attitude (conservative vs. liberal). Not all of these questions were included in all samples (e.g., date of birth was considered too invasive in some cultures; some cultures had no concept of suburban), and all collaborators were asked to adapt the demographic questions to obtain the most appropriate demographic variables for their culture (e.g., ethnicity and religious affiliation categories varied across cultures; political attitude terminology varied across cultures).

Personality trait measure. All samples were administered the BFI of personality traits (Benet-Martínez & John, 1998). The 44-item English BFI was constructed to allow quick and efficient assessment of five personality dimensions—Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness—when there is no possibility or need for more differentiated measurement of personality facets (Benet-Martínez & John, 1998). Self-report ratings are made on a scale from 1 (*disagree strongly*) to 5 (*agree strongly*) for each of the 44 items. This self-report measure was chosen to be part of the ISDP because

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of its ease of administration, because of its brevity, and because it has proven useful for cross-language and cross-cultural research (Benet-Martínez & John, 1998).

After all responses were collected from the 56 nations of the ISDP, however, certain translation errors became apparent in the BFI. For example, Item 14 from the BFI asks participants to rate whether they see themselves as someone who "can be tense." This item was mistranslated into German as *leicht entspannt reagiert* which means "reacting in a somewhat relaxed manner." The word *entspannt* should have been translated using the word *gespannt*, which means "tense." As a result, responses to BFI Item 14 in the Austrian, German, and Swiss samples were reversed before conducting further analyses. A few items in other translations required similar reversals, including items from the Ukrainian, Malaysian, and South Korean samples.

Other measures of the ISDP. Participants in the ISDP were asked to complete several additional measures, some of which were used in the present analyses. For example, the ISDP included a measure of global self-esteem (Rosenberg, 1965) and a measure called the sociosexual orientation inventory (Simpson & Gangestad, 1991). Also included were measures of adult romantic attachment (Bartholomew & Horowitz, 1991) and multiple tools to capture variation in human sexuality, including measures of sociosexuality (Simpson & Gangestad, 1991), short-term mating tendencies (Schmitt, Shackelford, Duntley, Tooke, & Buss, 2001), a survey of human mate poaching experiences (Schmitt & Buss, 2001), and the Sexy Seven trait measure of sexual self-description (Schmitt & Buss, 2000).

RESULTS

Not all participants fully completed all measures used in the present study. Consequently, we used the following procedure for dealing with missing data. First, any participant who did not complete at least 40 of the 44 items from the BFI was eliminated from further analyses. This resulted in 429 participants, evenly dispersed across world regions, being removed from consideration. The resulting sample of 17,408 participants formed the basis of the remaining analyses. Second, when computing scale scores, if a participant was missing more than one item from a Big Five scale, the scale was treated as missing data for that participant. This caused degrees of freedom to vary across some analyses.

INTERNAL RELIABILITY AND FACTOR STRUCTURE OF THE BFI ACROSS 56 NATIONS AND 10 WORLD REGIONS

The internal reliabilities of the BFI scales (using Cronbach's itemized alpha coefficient) across all cultures were .77, .70, .78, .79, and .76 for Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness, respectively. The internal reliabilities of the BFI scales within each of the 10 ISDP world regions are listed in Table 2. These reliabilities were based on all pooled responses across nations within each region. Reliabilities were substantial within most regions, though reliabilities did fall below .60 for Extraversion and Openness in Africa and for Agreeableness in the South and Southeast Asia. Still, these preliminary results indicated that the BFI appeared internally reliable across world regions.

When the raw responses of 17,408 individuals to the 44 items of the BFI were factored using principal axis factoring with varimax rotation, a clear five-factor structure was recoverable (Cattell, 1966). A six-factor structure was also discernible. However, the sixth

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TABLE 2
Internal Reliability of the Big Five Inventory Scales Across the 10 World Regions of the International Sexuality Description Project

World Region	*Extraversion*	*Agreeableness*	*Conscientiousness*	*Neuroticism*	*Openness*
North America	.84	.77	.79	.82	.79
South America	.70	.67	.76	.74	.79
Western Europe	.84	.68	.82	.82	.79
Eastern Europe	.71	.65	.72	.75	.74
Southern Europe	.74	.67	.79	.79	.76
Middle East	.74	.67	.77	.76	.75
Africa	.55	.62	.68	.63	.58
Oceania	.82	.76	.79	.82	.72
South and Southeast Asia	.64	.57	.71	.77	.68
East Asia	.72	.64	.73	.75	.78

factor was extremely weak and simply consisted of the negative loading items of Agreeableness. In total, the first five factors explained 30.8% of the variance. An alternate approach is to standardize all scores within culture before conducting factor analyses. This procedure reduces the confound of individual and cultural differences (Bond, 2001). When this was done, however, very similar results were obtained.

The worldwide factor structure of the BFI was very similar to the structure of the U.S. sample. To compare these two structures, the worldwide varimax matrix (excluding the United States) was Procrustes rotated to the U.S. structure (see Table 3). The choice of the U.S. structure as a target for Procrustes rotation was based on the fact that the BFI was developed in the United States and serves as the standard for the BFI. Even so, from a formal point of view, no one alignment of axes is preferable to others and any other structure could be selected as a reference for comparison. The total congruence coefficient was .98 and all factor congruence coefficients exceeded .97, indicating the virtual identity of these two factor structures. Individual-item congruences (McCrae, Zonderman, Costa, Bond, & Paunonen, 1996) also demonstrated good agreement: All coefficients were equal to or higher than .92. Thus, the personality structure recovered from the U.S. sample was almost identical to the dominant BFI personality structure that can be recovered from a diverse sample representing 55 other nations from around the world.

Next, to study factorial similarity across the major areas of the world in more detail, we computed factor structures for 10 geographical regions as grouped in Table 1. Table 4 reports the congruence coefficients for the Big Five factors after the varimax structure was Procrustes rotated toward U.S. structure regarded here as a BFI standard. With a mean congruence coefficient of .94 across all factors and geographical regions, there was a considerable degree of congruence among personality structures. Even the lowest value (.84) in Table 4 provided a clearly better-than-chance replication of the BFI factor structure. This agreement was particularly noteworthy in that the unit of analysis was single items, not their aggregates as is typical for the most cross-cultural comparisons.

Except for Africa and South and Southeast Asia, the factor structures of world regions showed congruences that exceeded .90, a value above which factor structures are regarded as clearly replicable (Haven & ten Berge, 1977). However, it should be noted that these two outlying regional structures do not form a single non-Western personality type, in part

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TABLE 3
Factor Loadings for the Big Five Inventory (BFI) Across 56 Nations and 30 Languages After Procrustes Rotation Targeted to the U.S. Normative Structure

BFI Items	*E*	*A*	*C*	*N*	*O*	*CONG*
Is talkative	**.62**	.04	–.04	.11	.08	1.00
Is outgoing, sociable	**.62**	.24	.08	–.04	.14	.99
Generates a lot of enthusiasm	**.46**	.20	.13	–.05	**.32**	.98
Is full of energy	**.44**	.20	.20	–.14	.26	.99
Has an assertive personality	**.33**	–.03	.23	–.15	.26	.96
Tends to be quiet	**–.68**	.10	.07	.04	.07	.99
Is shy, inhibited	**–.53**	.08	–.08	.26	.09	.99
Is reserved	**–.50**	.03	.09	.12	.07	.99
Is considerate and kind to almost everyone	.00	**.59**	.15	.05	.13	.99
Has a forgiving nature	.03	**.51**	–.03	–.05	.13	.99
Is helpful and unselfish with others	.04	**.46**	.16	.02	.16	.99
Likes to cooperate with others	.18	**.45**	.12	.03	.14	.99
Is generally trusting	.09	**.42**	.04	.00	.09	.98
Is sometimes rude to others	.11	**–.41**	–.12	.23	.10	.98
Starts quarrels with others	.18	**–.38**	–.09	.22	.04	.99
Can be cold and aloof	–.21	**–.37**	–.04	.12	.15	.97
Tends to find fault in others	.06	**–.32**	–.03	.27	.08	.98
Does a thorough job	.04	.08	**.59**	.05	.13	1.00
Does things efficiently	.11	.21	**.57**	–.05	.20	.99
Perseveres until the task is finished	.02	.08	**.53**	.01	.17	1.00
Is a reliable worker	.04	.20	**.52**	.08	.12	.99
Makes plans, follows through with them	.11	.07	**.51**	–.03	.14	.99
Tends to be lazy	–.10	–.10	**–.54**	.17	.09	1.00
Tends to be disorganized	.00	–.03	**–.53**	.12	.14	1.00
Can be somewhat careless	.04	–.04	**–.46**	.11	.17	.98
Is easily distracted	.01	.01	**–.39**	**.32**	.08	.98
Worries a lot	–.12	.03	–.03	**.63**	.03	.99
Gets nervous easily	–.09	–.05	–.07	**.58**	–.02	.96
Can be tense	–.08	–.06	.04	**.58**	.06	.99
Can be moody	–.04	–.19	–.06	**.48**	.11	.98
Is depressed, blue	–.28	–.14	–.14	**.46**	.03	.99
Is relaxed, handles stress well	.05	.13	.02	**–.57**	.19	.99
Is emotionally stable, not easily upset	.01	.17	.11	**–.49**	.14	1.00
Remains calm in tense situations	–.02	.13	.15	**–.46**	.26	.99
Is inventive	.18	–.05	.12	–.18	**.58**	.98
Has an active imagination	.13	.04	–.03	.05	**.56**	1.00
Is original, has new ideas	.22	.02	.13	–.14	**.55**	.99
Likes to reflect, play with ideas	.02	.04	.07	.04	**.53**	.99
Values artistic, aesthetic experiences	.00	.09	.01	.08	**.52**	.99
Is ingenious, deep thinker	.02	–.01	.19	.00	**.47**	.99
Is sophisticated in art, music, or literature	.01	.01	–.02	–.01	**.46**	.99
Is curious about many different things	.18	.10	.05	–.01	**.42**	.99
Has few artistic interests	–.02	.01	.05	.02	**–.34**	.98
Prefers work that is routine	–.10	.06	.07	.07	–.21	.96
Factor Congruence	.99	.99	.99	.99	.98	.99

NOTE: E = Extraversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism; O = Openness; CONG = item congruence. Loadings higher than absolute .30 are shown in bold.

because the factor congruence between Africa and South and Southeast Asia was also not very high (.90). In some cases, the reason for poor agreement was a single isolated item that may have been poorly translated or not commonly understood, but not always. For

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TABLE 4
Congruence Coefficients Between Big Five Inventory Factor Structure From 10 World Regions and the U.S. Structure

World Region	*E*	*A*	*C*	*N*	*O*	*Total*
North America[a]	.99	.98	.98	.98	.99	.98
South America	.95	.94	.96	.96	.97	.95
Western Europe	.98	.98	.98	.96	.97	.97
Eastern Europe	.90	.87	.96	.97	.96	.93
South Europe	.94	.94	.98	.98	.97	.96
Middle East	.94	.88	.96	.97	.95	.94
Africa	.88	.93	.88	.90	.84	.88
Oceania	.99	.98	.98	.98	.97	.98
South and Southeast Asia	.91	.85	.89	.95	.86	.88
East Asia	.94	.93	.95	.94	.95	.94
Average	.94	.93	.96	.96	.94	.94

NOTE: E = Extraversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism; O = Openness.
a. U.S. data are excluded.

example, after eliminating from African data the BFI item "has few artistic interests" (this reversed item of the BFI Openness scale had a congruence coefficient as low as .19), the average congruence coefficient across all scales (.88), and for Openness in particular (.93), did not increase substantially. This and another inverted BFI Openness item (i.e., "Prefers work that is routine.") functioned similarly in both South and Southeast Asian (.65) and African (.53) samples.

The aberrant behavior of an isolated item may not be the only cause of these slight discrepancies. In some other cases, for example Conscientiousness in South and Southeast Asia and Africa, the primary loadings on the appropriate factor were high enough, but there were loadings of BFI items from other scales that were incongruous with the target structure. Nevertheless, the generalizability of the factor structure across cultures was sufficient to proceed to the next step, evaluating the convergent validity of culture-level scores.

THE COMPUTATION OF STANDARDIZED PERSONALITY TRAIT SCORES FOR 56 NATIONS

To maximize the comparability of personality profiles across the 56 nations of the ISDP, raw Big Five scale scores for each nation were converted to standardized *T*-scores (see Table 5). *T*-scores were considered preferable because they are relatively easy to interpret, always having an overall mean of 50 and a standard deviation of 10. In this case, *T*-scores were computed by first standardizing the raw national scores around the U.S. average for each of the Big Five. That is, the U.S. score was subtracted from each national score, and this result was divided by the U.S. standard deviation. Afterward, these U.S.-standardized national scores were multiplied by 10, and then 50 was added. Similarly, national standard deviations were converted by dividing each deviation by the U.S. average and multiplying the result by 10.

Although this procedure may appear unnecessarily ethnocentric, the United States was used to standardize scores for two compelling reasons. First, previous studies involving the Big Five have standardized scores using the United States as a reference point (e.g., McCrae, 2002). Consequently, this procedure maximized the comparability of our ISDP findings with research previously reported in the literature. Second, if the worldwide average from the ISDP were used to standardize Big Five scores, the nations particular to the

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TABLE 5

Personality Trait Profiles (*T*-Scores) Based on Responses to the Big Five Inventory Across the 56 Nations of the International Sexuality Description Project

Nation	*Extraversion*		*Agreeableness*		*Conscientiousness*		*Neuroticism*		*Openness*		*Average*	*Acquiescence*
	M	SD	M	SD	M	SD	M	SD	M	SD	SD	*Bias*
Argentina	49.10	7.78	42.75	9.38	48.18	9.76	55.05	9.21	50.83	10.59	9.34	50.34
Australia	48.98	10.06	47.51	10.70	45.87	10.89	50.82	10.41	50.07	8.78	10.17	48.67
Austria	50.61	9.21	45.90	8.34	46.73	11.10	49.69	8.94	49.29	10.34	9.59	43.10
Bangladesh	44.98	6.48	50.49	7.64	46.71	9.66	51.20	8.58	53.35	9.97	8.46	52.97
Belgium	45.99	10.08	45.07	9.02	43.03	11.22	53.60	9.81	54.59	8.55	9.74	45.89
Bolivia	49.34	7.01	49.62	8.89	45.08	9.40	50.29	7.74	50.71	9.43	8.49	50.40
Botswana	49.56	8.07	52.11	8.50	50.27	9.12	48.61	9.32	48.19	7.84	8.57	47.56
Brazil	45.89	9.36	45.86	8.82	45.38	9.28	53.14	9.07	49.16	9.37	9.18	52.02
Canada	48.32	9.71	49.14	9.13	49.05	10.19	50.58	9.66	48.75	9.96	9.73	47.83
Chile	47.55	8.12	47.02	8.95	49.72	9.75	51.39	8.48	54.69	9.20	8.90	52.48
Congo, Democratic Republic of the	51.19	6.90	54.82	7.81	55.71	9.28	44.58	8.32	46.23	8.72	8.21	42.71
Croatia	51.70	7.39	45.20	8.24	46.02	9.08	46.16	7.49	48.00	10.69	8.58	42.01
Cyprus	49.10	7.77	51.16	9.84	48.49	8.75	51.44	10.11	49.36	10.03	9.30	47.24
Czech Republic	50.22	8.15	44.09	8.03	42.87	9.36	51.02	9.11	50.59	9.00	8.73	42.42
Estonia	50.41	7.87	49.58	8.15	45.84	10.39	46.99	8.79	53.17	8.67	8.77	44.84
Ethiopia	47.11	5.59	51.82	8.36	54.36	9.50	46.12	6.90	47.15	7.64	7.60	43.46
Fiji	49.68	6.84	49.27	9.06	46.00	9.06	48.03	7.39	47.21	8.62	8.19	47.31
Finland	49.84	9.26	49.46	8.82	51.60	8.63	47.84	9.75	50.33	11.04	9.50	42.68
France	45.44	8.77	46.64	8.19	49.26	10.23	52.29	9.34	48.09	9.52	9.21	41.63
Germany	50.31	8.99	45.08	8.17	46.52	10.06	50.29	8.44	47.80	9.32	8.99	41.46
Greece	48.60	7.14	52.42	9.04	47.45	10.88	53.19	9.80	51.53	8.91	9.15	48.16
Hong Kong	46.91	7.59	42.69	8.31	41.53	8.68	52.41	8.65	41.64	9.11	8.47	40.43
India	47.42	8.88	50.43	7.75	47.36	10.67	50.00	10.80	48.48	8.49	9.32	48.68
Indonesia	51.25	6.81	46.38	9.02	47.19	11.24	49.73	9.66	48.01	8.95	9.13	48.30
Israel	48.65	8.40	49.44	9.33	52.40	9.36	49.27	9.63	50.95	10.13	9.37	50.05
Italy	49.80	8.09	46.52	8.59	48.62	11.28	51.66	9.72	50.00	9.99	9.53	45.13
Japan	46.73	8.06	42.21	8.81	37.82	9.30	57.87	7.38	41.53	10.46	8.80	39.75

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Jordan	48.35	7.29	53.73	8.09	49.77	10.87	49.86	8.76	47.10	9.61	8.92	47.04
Latvia	49.39	8.65	43.79	9.54	44.21	8.67	51.11	9.49	49.91	9.87	9.24	46.34
Lebanon	48.32	8.58	46.10	8.14	44.56	10.40	53.35	9.14	49.40	9.11	9.08	48.86
Lithuania	49.71	7.91	42.61	8.16	44.56	7.62	51.87	8.74	49.04	8.65	8.22	49.78
Malaysia	50.03	5.58	48.55	6.77	47.08	7.03	48.14	6.31	47.61	7.39	6.62	40.46
Malta	50.45	8.79	49.56	9.03	45.97	11.61	52.35	10.07	50.66	9.70	9.84	49.49
Mexico	50.24	9.47	49.51	10.88	45.72	11.66	48.00	9.52	52.26	10.94	10.49	45.17
Morocco	48.81	6.93	48.95	8.01	45.22	8.50	50.87	9.08	49.10	9.06	8.32	46.80
Netherlands	49.75	9.22	46.08	8.77	43.91	10.90	48.61	9.71	49.94	9.21	9.56	45.70
New Zealand	50.61	9.36	46.83	9.19	44.18	10.27	49.59	9.92	49.49	8.78	9.50	47.79
Peru	48.35	7.60	43.64	7.88	47.36	9.51	53.39	8.29	51.29	9.98	8.65	51.55
Philippines	48.12	7.57	47.96	7.45	43.14	7.71	51.41	8.42	49.34	7.72	7.77	52.89
Poland	49.12	8.00	46.74	10.24	46.15	10.64	51.80	9.65	49.06	9.44	9.59	46.15
Portugal	48.06	9.67	49.52	8.76	47.75	10.11	50.21	9.62	50.29	9.51	9.53	44.96
Romania	50.33	7.80	45.31	8.48	48.10	9.66	48.03	8.44	53.13	7.78	8.43	48.95
Serbia	51.95	8.59	47.64	8.15	47.53	10.93	50.17	8.33	52.44	9.15	9.03	48.52
Slovakia	49.05	8.66	47.38	8.31	42.44	9.88	51.57	8.65	52.53	9.01	8.90	46.75
Slovenia	50.54	9.04	50.18	8.28	49.24	7.94	45.28	7.65	50.50	9.18	8.42	42.59
South Africa	49.61	8.56	49.97	9.33	49.61	10.17	49.01	8.69	49.01	9.10	9.17	50.38
South Korea	44.86	6.71	44.11	6.85	40.60	8.16	53.99	6.62	44.30	8.74	7.42	37.78
Spain	49.00	8.28	45.26	8.57	46.80	10.34	54.03	9.20	49.64	9.70	9.22	48.90
Switzerland	50.47	8.81	47.69	8.19	45.03	11.36	48.72	9.02	52.62	9.38	9.35	43.62
Taiwan	47.75	8.28	44.74	8.04	42.52	9.22	53.13	8.89	45.70	9.68	8.82	46.16
Tanzania	49.19	7.35	49.26	10.32	53.27	9.01	47.73	6.55	48.19	9.26	8.50	42.34
Turkey	51.59	9.51	47.89	9.07	48.71	11.13	49.88	10.18	52.70	9.48	9.87	48.08
Ukraine	46.45	7.09	39.05	7.63	43.89	7.35	48.02	5.88	42.06	8.65	7.32	35.62
United Kingdom	49.79	9.68	47.31	9.44	46.89	10.66	51.39	9.87	45.97	9.71	9.87	45.08
United States	50.00	10.00	50.00	10.00	50.00	10.00	50.00	10.00	50.00	10.00	10.00	50.00
Zimbabwe	48.69	8.77	49.77	9.70	51.75	10.52	48.26	9.14	48.52	8.05	9.23	47.89

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ISDP would influence the resulting *T*-scores in a way that would make future comparisons to studies involving a different set of nations incomparable. In short, using the United States as a standard provided the most reliable means for conducting cross-cultural comparisons.

One avenue for evaluating whether the nation-level *T*-scores of the BFI represent generalizable constructs is to look at the correlations of mean male *T*-scores for each nation and mean female *T*-scores for each nation. If men's and women's *T*-scores for each of the Big Five were correlated across cultures, this would speak to the generalizability of the nation-level scores across gender groups. We found that men's Extraversion levels were significantly correlated with women's Extraversion levels across the 56 nations of the ISDP, $r(54) = .52$, $p < .001$. Even stronger evidence of generalizability was found for levels of Agreeableness, $r(54) = .82$, $p < .001$, Conscientiousness, $r(54) = .80$, $p < .001$, Neuroticism, $r(54) = .66$, $p < .001$, and Openness, $r(54) = .69$, $p < .001$. Thus, it was apparent that whatever the BFI is measuring across cultures, it does so with regularity across the genders of each culture.

CORRELATIONS AMONG PERSONALITY TRAIT SCALES FROM THE BFI AND THE EPQ

Lynn and Martin (1995) published the mean scores of Neuroticism, Extraversion, and Psychoticism as measured by the EPQ for 37 countries. Of these countries, 24 overlapped with the set of 56 nations included in the ISDP. EPQ scores for additional 2 countries (Poland and Zimbabwe) reported by van Hemert, van de Vijver, Poortinga, and Georgas (2002) increased the overlapping set of nations to 26. Although the EPQ and the BFI do not conceptualize Neuroticism and Extraversion in a completely identical way, they do share common core themes (see Costa & Widiger, 1994; Watson & Clark, 1997). As expected, the Neuroticism scales of the two instruments were significantly correlated, $r(24) = .49$, $p = .01$. The correlation between BFI Extraversion scale and its EPQ counterpart was disappointingly low and did not reach statistical significance, $r(24) = .18$. For comparison, the correlation between NEO-PI-R Neuroticism and Extraversion domains with their EPQ counterparts in the set of 18 overlapping cultures described earlier were both significant, .80 and .51, respectively (McCrae, 2002). One possibility for the low association of the BFI and EPQ scales compared to the NEO-PI-R and EPQ scores is the greater diversity of cultures included in the ISDP. It may be that individuals from some non-Western cultures, of which there are more in the ISDP, respond to extraversion scales differently than most Western cultures. Still, this poor correlation is cause for concern with regard to the validity of the BFI Extraversion scale.

CORRELATIONS AMONG PERSONALITY TRAITS SCALES FROM THE BFI AND THE NEO-PI-R

Table 6 shows correlations between the BFI and the NEO-PI-R domains in an overlapping set of 27 cultures (i.e., Austria, Belgium, Canada, Croatia, Czech Republic, Estonia, France, Germany, Hong Kong, India, Indonesia, Italy, Japan, Malaysia, the Netherlands, Peru, Philippines, Portugal, South Africa, South Korea, Spain, Switzerland, Taiwan, Turkey, United States, Yugoslavia, and Zimbabwe). Among 36 cultures studied by McCrae (2002), two cultures (South Africa and India) were represented by two separate samples. For comparisons with the BFI, the Black and White NEO-PI-R samples of South Africa were averaged, and India was represented by the Marathi NEO-PI-R sample as the other Indian sample was composed of adolescents (see McCrae, 2002).

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TABLE 6
Correlations Between the Big Five Inventory (BFI) Factor Scales and the Revised NEO Personality Inventory (NEO-PI-R) Domain and Facet Scales

	BFI				
NEO-PI-R	*E*	*A*	*C*	*N*	*O*
Extraversion (E)	**.43***	.32	.46*	–.24	.73***
Agreeableness (A)	–.33	**.22**	–.07	–.10	–.33
Conscientiousness (C)	.30	.58**	**.45***	–.61***	.21
Neuroticism (N)	–.30	–.41**	–.23	**.45***	–.23
Openness (O)	.20	–.09	–.12	–.07	**.27**
E1: Warmth	**.43***	.39*	.43*	–.35	.42*
E2: Gregariousness	**.38**	.14	.34	–.11	.69***
E3: Assertiveness	**.36**	.30	.29	–.27	.54**
E4: Activity	**.44***	.28	.47**	–.38*	.57**
E5: Excitement seeking	**.24**	.34	.39*	–.06	.58**
E6: Positive emotions	**.49****	.36	–.17	–.37	.71***
A1: Trust	–.11	**.24**	–.18	–.07	–.17
A2: Straightforwardness	–.26	**.10**	–.05	.06	–.31
A3: Altruism	.35	**.39***	.47**	–.35	.54**
A4: Compliance	–.35	**.12**	–.13	.01	–.57**
A5: Modesty	–.15	**.24**	.14	–.19	.25
A6: Tender mindedness	–.15	**.27**	.14	–.30	.09
C1: Competence	.43*	.53***	**.53****	–.38*	.59***
C2: Order	.18	.61***	**.33**	–.51**	.05
C3: Dutifulness	.11	.40*	**.22**	–.57**	.28
C4: Achievement striving	.43*	.37	**.41***	–.50**	.28
C5: Self-discipline	.26	.55***	**.38***	–.50**	.34
C6: Deliberation	.02	.27	**.11**	–.60***	–.21
N1: Anxiety	–.45*	–.44*	–.24	**.63*****	–.27
N2: Angry hostility	.00	–.25	.03	**.24**	.00
N3: Depression	–.60***	–.41*	–.30	**.61*****	–.38*
N4: Self-consciousness	–.36	–.25	–.32	**.28**	–.52**
N5: Impulsiveness	.13	–.26	–.05	**.25**	.31
N6: Vulnerability	–.39*	–.72***	–.53**	**.71*****	–.56**
O1: Fantasy	.19	–.29	–.10	.13	**.36**
O2: Aesthetics	.23	–.04	–.09	–.08	**.19**
O3: Feeling	.32	–.03	–.05	–.11	**.44***
O4: Action	.21	.21	.16	–.24	**.21**
O5: Ideas	.23	.29	.14	–.33	**.28**
O6: Values	.02	–.19	–.11	.02	**.27**

NOTE: $N = 27$. The cross-cultural convergence correlations are shown in bold.
*$p < .05$. **$p < .01$. ***$p < .001$.

The results reported in Table 6 demonstrate cross-instrument correlations across all five high-order domains of personality and all 30 NEO-PI-R personality facets. Previous reports have demonstrated convergent validity for Neuroticism and Extraversion personality scales at the intercultural level of analysis (McCrae, 2002). The convergent validity of BFI nation-level scores on Extraversion, $r(25) = .44$, $p < .05$, and Neuroticism, $r(25) = .45$, $p < .05$, were confirmed in this study as well. The Extraversion correlation is particularly reassuring, given the poor correlation between the BFI and EPQ Extraversion scales. Importantly, this is the first attempt to address the cultural-level convergence of assessing

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the self-reported traits of Agreeableness, Conscientiousness, and Openness. The strongest convergent correlations for these traits were found between the NEO-PI-R and BFI measures of conscientiousness, $r(25) = .45$, $p < .01$. For both Agreeableness (.22) and Openness (.27), the corresponding convergent correlations were positive but failed to reach the level of statistical significance.

The low convergence between BFI Agreeableness and the NEO-PI-R Agreeableness did not persist across all the NEO-PI-R facets of Agreeableness, however. For example, the NEO-PI-R facet of Altruism (A3) correlated significantly with the BFI Agreeableness scale, $r(25) = .39$, $p < .05$. Indeed, when a select composite was formed among the four NEO-PI-R facets of Trust, Altruism, Modesty, and Tender Mindedness—four facets that are more at the conceptual core of Big Five Agreeableness (Graziano & Eisenberg, 1997)—national levels of BFI Agreeableness correlated significantly with the NEO-PI-R, $r(25) = .47$, $p < .01$. Still, the discriminant validity correlations for BFI Agreeableness were poor when looking at NEO-PI-R Conscientiousness and Neuroticism. In both cases, BFI Agreeableness was related to several facets of these other traits.

Similar to our Agreeableness findings, the relatively low level of convergent validity for the BFI Openness scale was not robust across all the NEO-PI-R facets of Openness. For example, the NEO-PI-R facet of Feeling (O3) correlated significantly with the BFI Openness scale, $r(25) = .44$, $p < .05$. When a select composite was formed among the four NEO-PI-R facets of Fantasy, Feeling, Ideas, and Values, national levels of BFI openness correlated significantly with the NEO-PI-R, $r(25) = .41$, $p < .05$. Still, the discriminant validity correlations for BFI Openness were very poor, especially when comparing BFI Openness to NEO-PI-R Extraversion. These shortcomings in discriminant validity will be addressed later.

Additional cross-cultural validity evidence can be gleaned by comparing the standard deviations across cultures. An overall standard deviation index was computed as the average across all five BFI scales. When this BFI variability index was compared to a similar index derived from the NEO-PI-R results, the two indexes of personality variability were marginally correlated across cultures, $r(25) = .36$, $p = .06$. However, after the elimination of Estonia's *SD* as a probable outlier (the largest *SD* value in the whole NEO-PI-R set; McCrae, 2002), the correlation between these two sets became significant, $r(24) = .43$, $p < .05$.

LIMITATIONS AND PROBLEMS WITH ESTABLISHING CROSS-INSTRUMENT OR CROSS-CULTURAL VALIDITY

Albeit significant, these cross-cultural convergent correlations between the BFI and the NEO-PI-R domain scales are noticeably smaller than cross-instrument convergence at the individual level (i.e., when the same individuals simultaneously complete both measures). At the individual level, even the smallest convergent correlations typically exceed the .60 level with the BFI scales (Benet-Martínez & John, 1998). Apparently, biases and measurement errors prevented the convergent correlations between two measurement instruments from being more substantial at the intercultural level. There are at least four obvious candidates for the lower than expected cross-instrument convergent correlations at the intercultural level.

Sampling. Some of the national samples, those studied using the BFI and those studied using the NEO-PI-R, were represented by relatively small samples and were certainly not representative of entire national populations. In the BFI study, for example, France was

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represented by one of the smallest samples, only 136 college students. This sampling limitation may be one of the reasons why France curiously received among the lowest ($T = 45.44$) score on the BFI Extraversion scale. According to previous studies on personality and social psychological attitudes, the French population has demonstrated no inclination toward extreme introversion. Instead, the France mean score is typically located close to the middle of the Extraversion distribution (McCrae, 2002). For example, in the NEO-PI-R sample France was the 15th from the top among 36 cultures (McCrae, 2002). Also, the French EPQ score of Extraversion was quite average, rather close to the midpoint of distribution (Lynn & Martin, 1995). It is also indicative of sampling problems with the French ISDP sample that after eliminating French data the correlation between the BFI and NEO-PI-R Extraversion scales increased considerably, from $r(25) = .44$, $p < .05$, to $r(24) = .52$, $p < .01$. Thus, some of the studied samples may be problematic, and their results may diminish the observed interinstrumental correlations.

Standardization. Typically, findings from the NEO-PI-R are normalized in respect to age and gender. Across cultures, women generally score higher than men on the NEO-PI-R scales of Neuroticism and Agreeableness, and college-age men and women tend to score higher on the NEO-PI-R scales of Openness, Neuroticism, and Extraversion and lower on Conscientiousness, than do older individuals (McCrae, 2002). To correct for age and gender differences, raw NEO-PI-R scores are standardized with respect to U.S. age and gender norms. In contrast, the BFI trait scores from the ISDP were not standardized. Fortunately, the whole ISDP sample was relatively well balanced with regard of sex and generally homogeneous with regard of age. In addition, analyses using sex- and age-normalized BFI scores produced results similar to those reported here.

Nevertheless, some observed cross-cultural differences might have been caused, at least in part, by differences in the sample mean age. For example, among three German-speaking cultures, Switzerland scored higher in openness ($T = 52.62$) than did Austria ($T = 49.29$) and particularly higher than did Germany ($T = 47.80$). An extensive study of German-speaking countries ($n = 7{,}974$) has previously shown that the mean-level differences between these three countries are normally very small; only 1.1% of the variance in openness was explained by the country of participants (Angleitner & Ostendorf, 2000). In contrast to the sample from Switzerland, both German and Austrian samples from the ISDP contained noncollege samples of adults who typically score lower in openness. The mean age of Germans was 27.9 years, whereas Austrians were 26.5 and Swiss Germans were only 23.6. Although the mean differences in age were not very large, they may be partly responsible for the observed intercultural differences in openness.

Acquiescence. It is possible that in some cultures people have a stronger tendency to agree with test items regardless of their content—a response bias known as the acquiescence bias. The NEO-PI-R and all its translations minimize the effects of the acquiescence bias because all subscales contain roughly equal numbers of positively and negatively phrased statements. The BFI, in contrast, may be affected by the acquiescence bias because the number of direct and reversed items is not balanced. For example, of the 10 BFI items designed to capture variation in openness, only 2 are keyed in the opposite direction, and only 3 of 8 BFI Neuroticism items are keyed in the opposite direction. Therefore, we can expect that after partialling out the acquiescence bias (i.e., by constructing an acquiescence index where an equal number of positively and negatively keyed items from each of the BFI scales are scored in the same direction), the correlation between the BFI

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and the NEO-PI-R corresponding scales would improve. Indeed, after controlling for acquiescence, the partial correlations increased slightly; in the case of BFI and NEO-PI-R Openness scales, the association rose from $r(25) = .27$, *ns*, to $r(24) = .40$, $p < .05$. Agreeableness cross-instrument correlations were also affected by partialling out the acquiescence from the BFI, shifting from $r(25) = .22$ to $r(24) = .27$. Thus, the acquiescence bias was likely one of the causes for the lowered convergent correlations reported earlier between parallel instruments across 27 nations.

Conceptualization. Although the NEO-PI-R and the BFI can be viewed as measuring the same broad Big Five personality traits, the way in which they conceptualize each trait is slightly different. Almost by definition, the NEO-PI-R has been designed to measure a wider array of concepts than BFI. Empirical data from the ISDP would seem to support this view. For example, the definition of neuroticism in the BFI seems to be primarily related to Anxiety (N1), Depression (N3), and Vulnerability (N6) because the BFI had significant correlations only with these NEO-PI-R facets (see Table 6). This result was hardly surprising because among the eight BFI Neuroticism items there are none that ostensibly measure the NEO-PI-R facets of Angry Hostility, Self-Consciousness, or Impulsiveness—scales that some Big Five theorists tend to place in other domains (see John, 1990; Wiggins & Trapnell, 1997).

In addition to conceptual breadth, in some cases the NEO-PI-R and the BFI seem to focus on different aspects or manifestations of the same underlying traits. For example, the finding that BFI Agreeableness was related to the NEO-PI-R Extraversion facet of warmth (E1), $r(25) = .39$, $p < .05$, may reflect the fact that the NEO-PI-R includes in Extraversion features of prosociality and interpersonal closeness that the BFI tends to place within the trait of Agreeableness (see also Graziano & Eisenberg, 1997). Differences in conceptualization are particularly obvious in the case of the BFI Openness scale. Judged on the basis of ISDP intercultural correlations, the way in which Openness is defined in the BFI is much closer to the NEO-PI-R definition of Extraversion than NEO-PI-R Openness. The correlation between BFI Openness and NEO-PI-R Extraversion was extremely high, $r(25) = .73$, $p < .001$, and correlations of BFI Openness with facets of NEO-PI-R Extraversion ranged from .42 to .71, all of which were significant (see Table 6). Interestingly, the same tendency was noticeable at the individual level of analysis—where individuals from the same culture are administered both tests at the same time. For example, the English BFI Openness scale is rather strongly correlated, $r(160) = .44$, $p < .001$, with NEO-FFI Extraversion (Benet-Martínez, personal communication, March 2002).

These examples seem to suggest that both instruments are measuring basically the same spectrum of personality traits, but their categorization of this spectrum is slightly different (Poortinga et al., 2002). To test this hypothesis, we performed canonical analysis between the five BFI and the five NEO-PI-R domain scales. We found that the canonical correlation was remarkably high, $R = .91$, $\chi^2(25) = 54.28$, $p = .001$. Thus, even at the intercultural level of analysis, these two instruments were highly redundant. The redundancy of the first (BFI) set of measures given the second (NEO-PI-R) set was 57.8%, and the redundancy of the second (NEO-PI-R) set of measures, given the first (BFI) set, was 48.0%. Because successively extracted canonical roots were uncorrelated, to arrive at a single index of redundancy one can simply sum up the redundancies across all significant roots (Stewart & Love, 1968). The first canonical root alone accounts for 66.6% of the redundancy. When all significant roots were taken into account, virtually all information about the culture

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level of personality traits provided by one instrument (95.5%) can be recovered on the basis of information that was measured by another instrument.

ESTABLISHING CROSS-INSTRUMENT OR CROSS-CULTURAL VALIDITY BY RELATING BIG FIVE SCORES TO EXTERNAL CRITERIA

A final avenue for evaluating the cross-instrument validity of national Big Five scores is to correlate nation-level scores from different Big Five measures with select external criteria. For example, if the national extraversion profiles provided by the EPQ, the NEO-PI-R, and the BFI similarly predict nation-level scores of an external variable, such as sexual behavior, this would provide evidence of the functional equivalence of the extraversion scales. In addition, if intraregional correlations revealed similar patterns to international findings—if extraversion were reliably related to sexuality within nations in the same way that extraversion relates to sexuality across nations—this would provide evidence that the nation-level scores along the Big Five are capturing variability in personality traits that is meaningful at a more psychological level (see also Steel & Ones, 2002). Using additional data from the ISDP, we were able to provide two cases for evaluating the functional equivalence of international and intraregional Big Five scores.

Participants from 47 nations of the ISDP completed the Sociosexuality Orientation Inventory (SOI), a measure of sexual behaviors, emotions, and attitudes (Simpson & Gangestad, 1991). Higher scores on the SOI indicate that a person has a more liberal or "promiscuous" orientation to sexuality. As is typical for measures of liberal sexual attitudes, the sociosexual variation has been shown to be positively related to extraversion-related traits (Simpson & Gangestad, 1991; Snyder, Simpson, & Gangestad, 1986). As shown in the first data column of Table 7, national levels of extraversion were positively correlated with national levels of sociosexuality across the EPQ, NEO-PI-R, and BFI measures of extraversion. This finding provides cross-instrument and cross-cultural evidence of the functional equivalence (i.e., concurrent validity) of national extraversion profiles. Even though extraversion is conceived of in a slightly different manner across these three instruments, national sociosexuality levels were positively correlated with extraversion across all three measures. In addition, extraversion was positively associated with sociosexuality (controlling for sex of participant) within all the world regions of the ISDP, though in Africa this association only approached marginal significance, $r(797) = .05$, $p = .12$. Sex of participant was controlled for because of the tendency for men to score much higher than women on the SOI (Simpson & Gangestad, 1991). Across all individual nations, the mean within-nation correlation between extraversion and sociosexuality was .11, with a standard deviation of .11. These findings suggest that the correlations based on nation-level profiles may reflect a psychological phenomenon that also takes place within most nations. As seen down the second data column of Table 7, international and intraregional levels of neuroticism tended to be unrelated to sociosexuality. This provided some evidence of the discriminant validity of nation-level personality profiles. However, similar to the earlier findings, the discriminant validity of the BFI Neuroticism scale was somewhat poor in that it did correlate with sociosexuality.

Participants from 55 nations of the ISDP completed the Rosenberg Self-Esteem Scale (RSES), a measure of global self-esteem. Higher scores on the RSES indicate that a person has a higher level of self-esteem. Typically, research from Western cultures has shown that individuals with high self-esteem tend to be more extraverted and less neurotic than those

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TABLE 7
International and Intraregional Correlations Among Extraversion, Neuroticism, and Key External Criteria

	Sociosexuality		*Self-Esteem*	
	Extraversion	*Neuroticism*	*Extraversion*	*Neuroticism*
Eysenck's Personality Questionnaire				
International	.60*	–.34	.40	–.27
Number of nations	14	14	15	15
NEO-PI-R				
International	.72***	–.17	.52**	–.36
Number of nations	23	23	26	26
Big Five Inventory				
International	.56***	–.30*	.30*	–.18
Number of nations	47	47	55	55
Intraregional[a]				
North America	.12***	.02	.37***	–.51***
South America	.11**	–.06	.14***	–.21***
Western Europe	.13***	–.03	.43***	–.51***
Eastern Europe	.19***	–.05*	.39***	–.42***
Southern Europe	.10***	.01	.34***	–.44***
Middle East	.11***	–.03	.21***	–.19***
Africa	.05	.00	.27***	–.28***
Oceania	.12***	–.01	.42***	–.51***
South and Southeast Asia	.20***	–.05	.32***	–.41***
East Asia	.14***	.00	.28***	–.45***

a. Partial correlations controlling for sex of participant.
*$p < .05$. **$p < .01$. ***$p < .001$.

with low self-esteem (McCrae & Costa, 1990). As shown down the right side of Table 7, national levels of extraversion tended to be positively associated with national levels of self-esteem. For the EPQ, this association approached marginal significance ($p = .14$). This finding provided cross-instrument and cross-cultural evidence of the functional equivalence validity of national extraversion profiles. National levels of neuroticism were only slightly related to national levels of self-esteem, though this association reached marginal significance for NEO-PI-R Neuroticism ($p = .07$). In addition, extraversion was positively associated, whereas neuroticism was negatively associated, with self-esteem within all the world regions of the ISDP. Across all individual nations, the mean within-nation correlation between extraversion and self-esteem was .35, with a standard deviation of .12. Again, these findings confirm that the correlations based on nation-level profiles reflect real psychological phenomena that take place within nations. These findings, taken together, suggest that national levels of personality traits as assessed by various measures reasonably converge in their ability to predict external criteria.

PATTERNS OF THE BIG FIVE ACROSS 56 NATIONS AND 10 WORLD REGIONS

The third major objective of this study was to identify any patterns in personality traits across the worldwide sample of the ISDP. Looking across all 56 nations of the ISDP, we found a statistically significant main effect of nation on BFI Extraversion, $F(55, 17{,}333) = 9.96$, $p < .001$, $\eta^2 = .03$, though the magnitude of this effect as indexed by partial eta-square

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(η^2) was only small to moderate in size. According to Cohen (1988), η^2 is considered small if .01, medium if .06, and large above .14. As shown in Table 5, it appeared that the most extraverted people tended to live in Serbia and Croatia, whereas the most introverted resided in Bangladesh and France. Post hoc analyses (e.g., Tukey's honestly significant difference, HSD) confirmed these general national trends.

We found a significant and moderately sized main effect of nation on Agreeableness, $F(55, 17{,}346) = 29.36$, $p < .001$, $\eta^2 = .09$. The most agreeable nations were the Democratic Republic of the Congo and Jordan, whereas Japan and Lithuania scored the lowest on Agreeableness. Nation had a moderate main effect on the BFI Conscientiousness factor scores, $F(55, 17{,}334) = 30.90$, $p < .001$, $\eta^2 = .09$. The top nations in Conscientiousness were the Democratic Republic of the Congo and Ethiopia, whereas Japan and South Korea scored the lowest. A small to moderate main effect of nation was observed on the trait of Neuroticism, $F(55, 17{,}338) = 17.03$, $p < .001$, $\eta^2 = .05$. Table 5 shows that the highest national scores on the BFI Neuroticism scale were from Japan and Argentina, whereas the lowest national levels of Neuroticism were obtained from Democratic Republic of the Congo and Slovenia. Respondents from Chile and Belgium rated themselves as the most open to experience, whereas the people of Japan and Hong Kong described themselves as extremely low in Openness. The main effect of nation on Openness was also statistically significant and moderate in size, $F(55, 17{,}239) = 23.94$, $p < .001$, $\eta^2 = .07$.

To determine whether certain patterns or profiles in personality exist across cultures, one possibility is not to look at trait means in isolation but simultaneously across the whole personality profile. The sum of the squared differences among the five corresponding scores for each pair of two nations can be used to characterize the Euclidean similarity of their personality profiles. Looking at the shortest Euclidean distances between cultures, it was clear that many pairs were close to each other in systematic ways. The list of the nearest neighbors includes, for example, such pairs as the Democratic Republic of the Congo and Tanzania, Botswana and South Africa, Malaysia and Fiji Islands, Germany and Austria, Greece and Cyprus, and Latvia and Lithuania. Many of these pairs share the same geographical region, history, culture, and ancestry. However, some of the closest neighbors have little in common that could easily explain the extreme similarity of their personality profiles. For example, it seemed unclear what kind of cultural or historical relatedness outside of pure coincidence could bring together Estonia and Mexico, Indonesia and the United Kingdom, Israel and Finland—all similar in the Euclidean distance across all Big Five dimensions.

Nonetheless, several systematic trends in the worldwide distribution of personality traits were evident, especially when looking at cultures not in isolation but aggregated over the entire geographical world regions listed in Table 1. According to these groupings, the least extraverted people tended to live in East Asia. As shown in Figure 1, using raw means (not *T*-scores) and 95% confidence interval error bars, it appeared that the level of Extraversion was much lower in East Asia than in most other world regions. A one-way ANOVA with world region as the independent variable and Extraversion as the dependent variable found a significant main effect of world region, $F(9, 17{,}379) = 20.29$, $p < .001$, $\eta^2 = .01$, though the magnitude of this effect as indexed by η^2 was small. Multiple post hoc analyses (e.g., Tukey's HSD) confirmed the significant deviation of East Asia from other world regions. Interestingly, South America and South and Southeast Asia were also significantly lower on extraversion than the rest of the world.

World region had a significant main effect on agreeableness, $F(9, 17{,}392) = 101.26$, $p < .001$, $\eta^2 = .05$. As seen in Figure 2, nations from Africa scored significantly higher and

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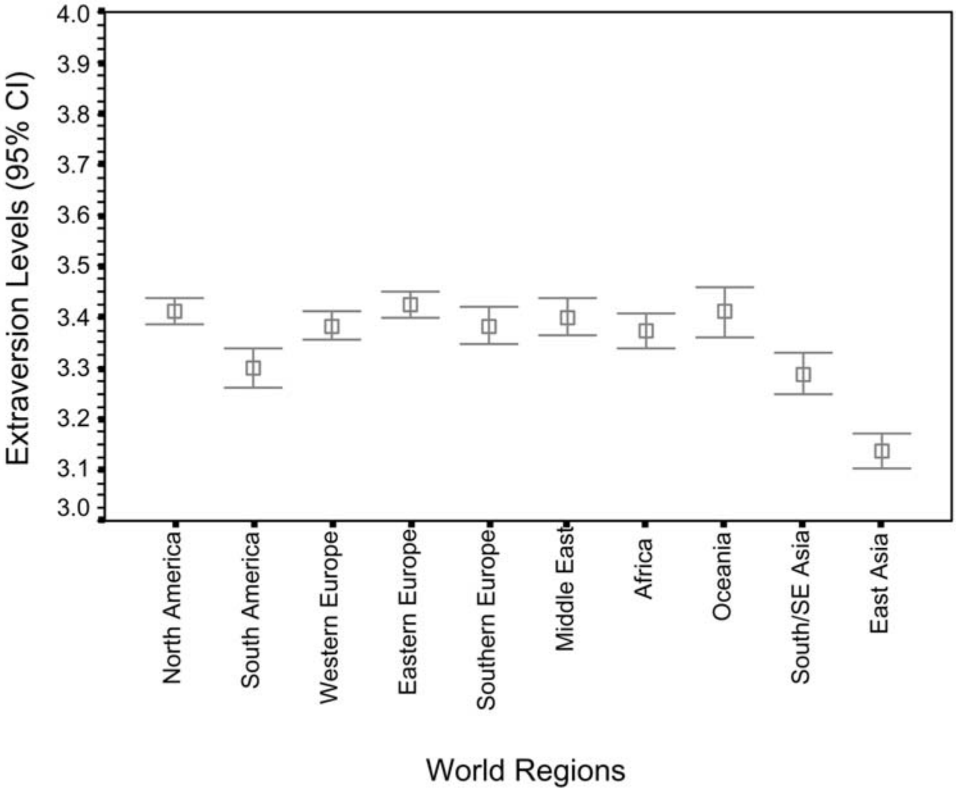

Figure 1: Extraversion Levels (With 95% Confidence Interval [CI] Error Bars) Across the 10 World Regions of the International Sexuality Description Project

East Asians scored significantly lower than all other world regions. The regions of South America, Western Europe, and Eastern Europe were significantly different from all other regions as well, according to post hoc analyses. World region had a significant and moderately sized main effect on Conscientiousness, $F(9, 17{,}380) = 122.84$, $p < .001$, $\eta^2 = .06$. As with Agreeableness, the world region of Africa scored higher and the region of East Asia scored significantly lower on Conscientiousness than all other world regions according to post hoc analyses (see Figure 3).

World region had a statistically significant but small main effect on Neuroticism, $F(9, 17{,}384) = 47.45$, $p < .001$, $\eta^2 = .02$. In somewhat of a contrast to the regional trends in Conscientiousness, Africa scored significantly lower on the BFI Neuroticism scale, whereas East Asia scored higher, than did all other world regions. In addition, Figure 4 shows that South America and Southern Europe scored higher than did all regions save East Asia. Finally, world region had a significant and small- to moderate-sized main effect on Openness, $F(9, 17{,}375) = 63.33$, $p < .001$, $\eta^2 = .03$. As shown in Figure 5, the world region of East Asia scored significantly lower on Openness than did all other world regions according to all post hoc analyses. Interestingly, Africa also scored lower on openness than other regions, whereas South America scored significantly higher than did other world regions.

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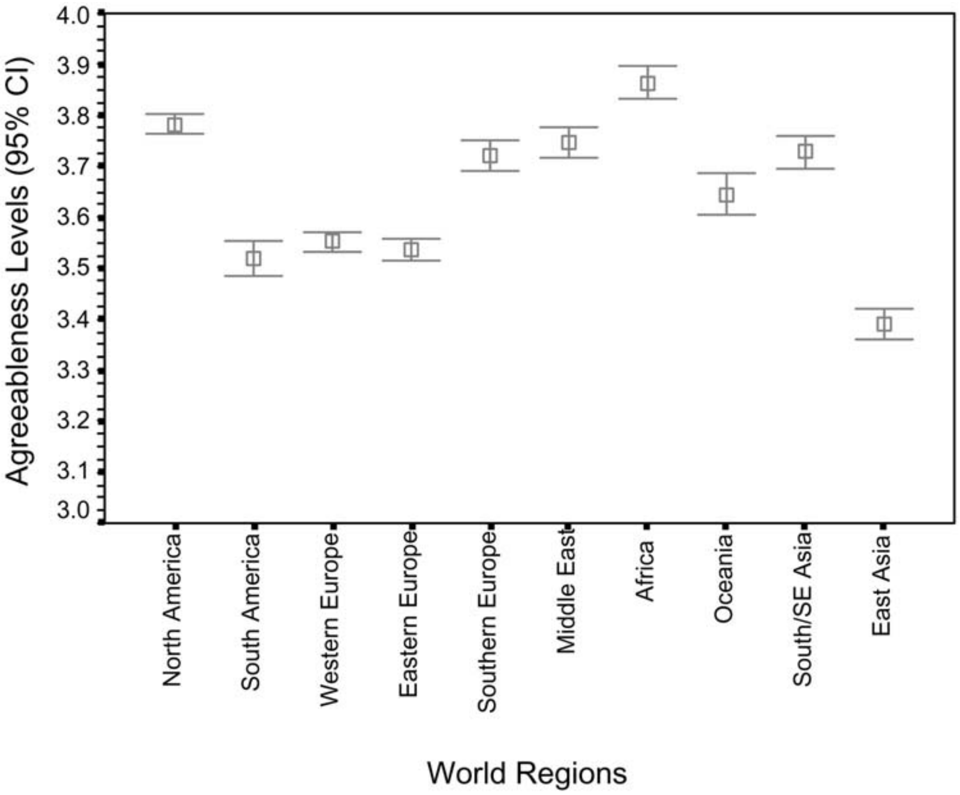

Figure 2: Agreeableness Levels (With 95% Confidence Interval [CI] Error Bars) Across the 10 World Regions of the International Sexuality Description Project

Some of these regional personality profiles may seem counterintuitive. In particular, stereotypes about national character usually do not portray East Asian cultures (e.g., Chinese, Korean, and Japanese cultures) as those where people are in a great deficit of will and determination to work hard toward their goals (i.e., low conscientiousness). Our ISDP findings challenge not only intuitions about personality stereotypes but also certain reasoned expectations about the relationships between personality traits and objective societal indicators. For example, it would seem logical to expect that the economic prosperity of a nation would be related to the conscientiousness of its citizens or at least that conscientiousness would be a favorable factor for economic development. Contrary to this expectation, the correlation between the BFI factor scores of Conscientiousness and gross domestic product (GDP) per capita approached marginal significance in the negative direction, $r(52) = -.21$, $p = .13$ (GDP per capita data were taken from the United Nations Development Programme, 2000). A similar result was recently found when relating the NEO-PI-R Conscientiousness scale to GDP per capita (Steel & Ones, 2002), $r(24) = -.68$, $p < .05$. These findings provide an interesting example of how the direct assessment of personality traits can produce results that run counter to expected culture-personality relationships. It remains unclear, though, whether these counterintuitive results should challenge the extension of culture-personality links at the individual level to the cultural

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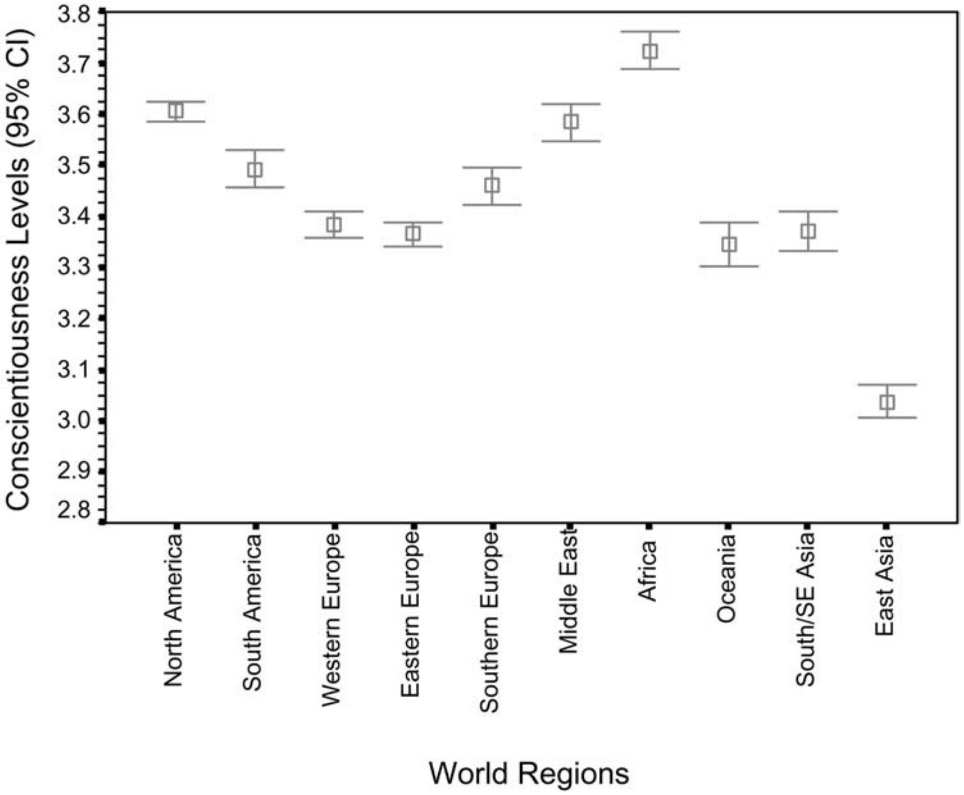

Figure 3: Conscientiousness Levels (With 95% Confidence Interval [CI] Error Bars) Across the 10 World Regions of the International Sexuality Description Project

level or whether the national personality profiles here reflect a problem of metric equivalence. Simply analyzing mean-level differences across cultures is not the only way to determine whether certain regions have particular personality profiles, however.

BIG FIVE STANDARD DEVIATIONS ACROSS 56 NATIONS AND 10 WORLD REGIONS

Although the factor score values of the BFI are subject to many different biases (e.g., different cultural standards by which a trait is judged), the variability about the averages would seem less vulnerable to this particular kind of distortion, though it is still vulnerable to certain response biases (Au & Cheung, 2004; Chan, Gelfand, Triandis, & Tzeng, 1996). Examination of the intercorrelations of BFI domain standard deviations reveals that the magnitude of variance is consistent across facets. Like regularities previously reported in the personality literature (McCrae, 2001), cultures that had high *SD*s for some domain of personality tended to have high *SD*s for all other domains or facets as well. In the current sample of 56 nations, intercorrelations of *SD*s were significant ranging from .39 to .67 (with the mean *r* of .50). Because variability was generalizable across domains, a mean *SD* was calculated and standardized over the five domains as described earlier (see Table 5).

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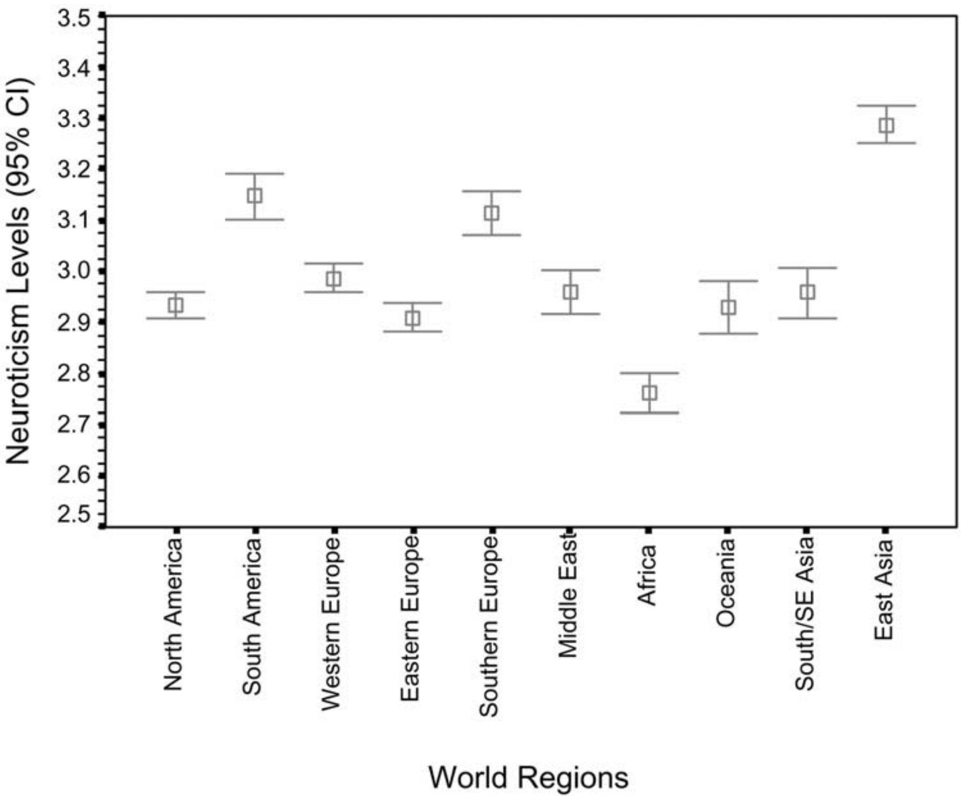

Figure 4: Neuroticism Levels (With 95% Confidence Interval [CI] Error Bars) Across the 10 World Regions of the International Sexuality Description Project

The range of the aggregated variability was substantial from Malaysia (*SD* = 6.62) to Mexico (*SD* = 10.49). Like the NEO-PI-R data (McCrae, 2002), most of the nations from Asian and African world regions, with the notable exceptions of New Zealand and Australia, were in the lower half of the distribution of mean *SD*s. The mean *SD* variability was the most conspicuous, in contrast, among European and American countries. It is possible that in modern, industrialized societies, the heterogeneity of personality traits is larger than in developing nations. Indeed, the mean *SD* correlated positively with the life expectancy, $r(52) = .42$, $p < .01$, and per capita GDP, $r(52) = .50$, $p < .001$.

DISCUSSION

This cross-cultural study of personality traits had three primary objectives. First, we evaluated the factor structure of the BFI across diverse forms of human culture. We found that the five-dimensional structure found previously (Benet-Martínez & John, 1998) was highly replicable across all the major cultural regions of the world. Second, we wanted to evaluate the validity of nation-level BFI trait profiles. We found that BFI trait levels were reliably related to national profiles previously reported in the literature (e.g., from the

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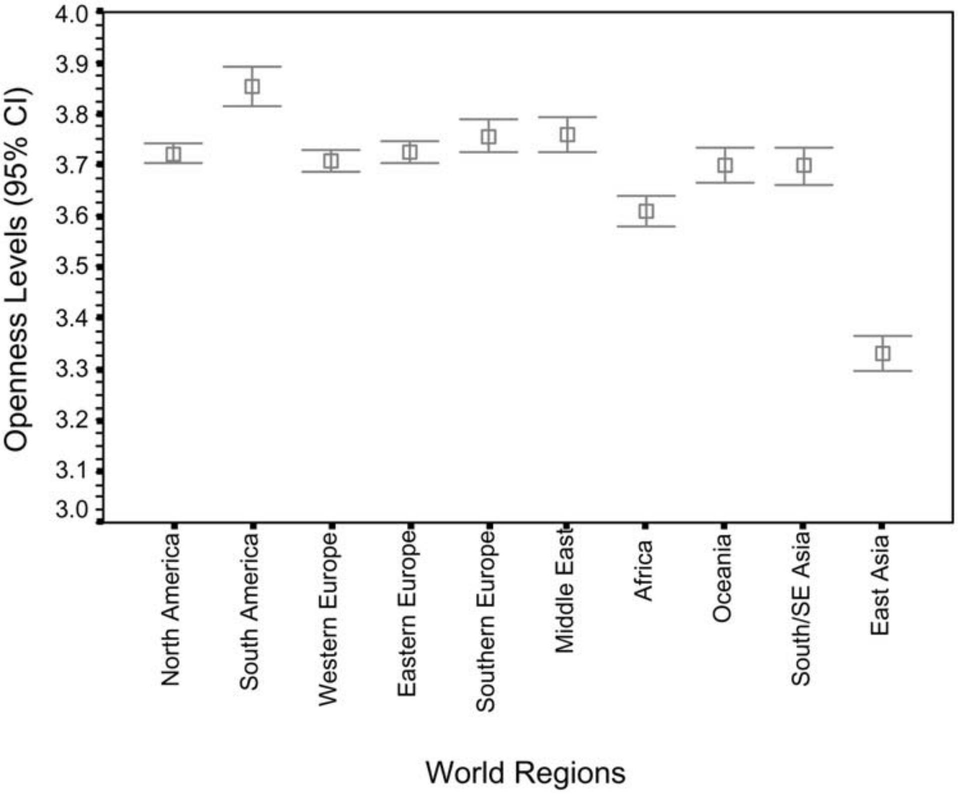

Figure 5: Openness Levels (With 95% Confidence Interval [CI] Error Bars) Across the 10 World Regions of the International Sexuality Description Project

NEO-PI-R), particularly when issues of sampling and acquiescence are addressed. Third, we attempted to document the worldwide distribution of personality traits as measured by the BFI. We found several systematic patterns of personality traits across cultures. We now review each of these major objectives in turn, paying close attention to the limitations of our findings.

DOES THE PERSONALITY STRUCTURE OF THE BFI GENERALIZE ACROSS CULTURES?

After comparing the Spanish- and English-language versions of the BFI, Benet-Martínez and John (1998) came to the conclusion that there was little evidence for substantial Latin-U.S. cultural differences in personality structure at the broad level of abstraction represented by the Big Five. The present study expanded the comparison of the BFI structure to another 28 languages and 54 cultures. Although the results of the present investigation basically agreed with the conclusions of Benet-Martínez and John—that observed cultural differences in personality structure are rather small—there remain some important caveats to this general conclusion.

In the majority of cross-cultural comparisons, the differences in personality structure were very small and should probably be ignored. However, in some cases the differences

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in the patterns of BFI covariation were not totally negligible. There were some nations, and entire geographical regions, where the BFI personality structure deviated slightly from the dominant personality structure characteristic of most of the world. For example, we found in Asia that the BFI structure was somewhat at odds with the U.S. structure. Other researchers have noticed that personality traits within this general cultural region—particularly in the Philippines—are not always organized exactly in the same manner as is typical of Western countries (Guanzon-Lapeña, Church, Carlota, & Katigbak, 1998). Moreover, according to some reports the openness domain of personality has not been consistently extracted in China (F. M. Cheung et al., 2001). Because Asian cultures tend to be more collectivist (Hofstede, 2001), a reasonable speculation may be that openness takes on a different form or function in more collectivist cultures.

In previous research, similar problems have occurred when personality traits were measured in Africa. For example, researchers failed to find a clear openness factor in Black South African cultures (Heaven, Connors, & Stones, 1994; Heuchert, Parker, Stumpf & Myburgh, 2000). In a Shona translation of the NEO-PI-R, the Openness scale demonstrated the poorest factorial congruence with regard of the U.S. normative structure (Piedmont, Bain, McCrae, & Costa, 2002). On the other hand, in one careful examination of the generalizability of the FFM to the Philippines—a typical example of a collectivist culture (Hofstede, 2001)—it was concluded that the five-factor structure replicated well in the Philippines and indigenous or emic inventories added only modest incremental validity beyond that of imported or etic instruments (Katigbak, Church, Guanzon-Lapeña, Carlota, & del Pilar, 2002).

The present study may provide some special insight into the problem of whether the openness factor of the Big Five is replicable in non-Western nations. Indeed, the ISDP represents the largest sampling of African cultures ever conducted in which the Big Five were directly assessed and includes 7 separate nations with more than 1,200 individual respondents. Rather surprisingly, the factor in the ISDP world region of Africa that demonstrated the closest resemblance to the U.S. personality structure was openness (.93), the only one that exceeded a factor replicability criterion of .90. There may be several explanations for the discrepancy between the present study and previous failures to replicate the openness dimension in Africa. It is possible, for example, that openness is a concept that is difficult to translate into African languages, such as Shona and Xhosa, in which there is a shortage of the openness-related terms. Much of the previous research has focused on the psychological dimensionality of indigenous or emic single-word descriptors, whereas the BFI uses full statements about behaviors, thoughts, and emotions instead of just individual terms. In addition, African participants in the ISDP were not studied in their native languages and instead were administered either English or French versions of the BFI.

Overall, we found that the BFI personality structure replicated well across a wide spectrum of cultural regions. The BFI proved to have substantial and robust levels of internal reliability, and a five-factor personality structure consistently emerged from principal components analyses. This tended to be true at the level of individual cultures, across all 10 major world regions and across all nations combined. One major caveat to interpreting the importance of these findings is that the 44 BFI items used in the ISDP were predominantly imported or etically transported into other cultures. That is, instead of the five factors emerging from native conceptions of personhood across all cultures, our findings merely confirm that when the 44 English items that form five factors are translated into other languages, they retain a five-dimensional structure. Nevertheless, by assessing personality in

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several cultures not previously examined, this study provides more evidence that the five-factor structure of personality is generalizable (cf. Peabody & De Raad, 2002). Thus, the ISDP results can be taken as new, though limited, evidence that the Big Five dimensions of personality can be meaningfully measured across human cultures.

DO BFI SCORES CONVERGE WITH OTHER MEASURES OF THE BIG FIVE ACROSS CULTURES?

The joint administration of Eysenck's Neuroticism and Extraversion scales with their NEO-PI-R counterparts normally produces a substantial converging correlation between corresponding scales (Costa & McCrae, 1995). Previous studies have also obtained a relatively high correspondence between the respective scales of these two instruments, the EPQ and the NEO-PI-R, when they have been administered separately to unrelated groups of individuals and thereafter averaged into single indicators of whole cultures (McCrae, 2002; though see Poortinga et al., 2002). Before the present ISDP findings, there had been no information about the convergent validity of self-reported measures of openness, agreeableness, and conscientiousness at the level of intercultural analysis. This investigation filled this knowledge gap and we now have evidence that two independent measures of the Big Five (the BFI and the NEO-PI-R) demonstrate reasonable cross-cultural agreement, particularly when issues of sampling, standardization, and acquiescence are addressed. Cultures that scored high on a personality trait as measured by the BFI tended also to score high on that trait as measured by the NEO-PI-R. According to both the BFI and NEO-PI-R, for example, Japan's level of neuroticism was among the highest of all cultures, and according to the EPQ, Japan's neuroticism was the third highest (Lynn & Martin, 1995).

The significant level of agreement that we uncovered between parallel personality measures across cultures is rather remarkable when one considers the many hurdles to obtaining accurate multiculture and multi-instrument comparisons. There are inevitably problems with individual instrument translations, the unrepresentativeness of samples, response biases and scale variations, and slightly different definitions of the Big Five across the BFI, the NEO-PI-R, and the EPQ. Controlling for at least some of these biases and measurement errors (e.g., the acquiescence bias) considerably improved the agreement we observed among scales. Future investigations that control for other confounding factors or that follow up our results using larger or more representative samples may help clarify why a few cultures tended to score differently across measures (e.g., France's conspicuously low BFI Extraversion score).

NATIONAL PROFILES OF PERSONALITY TRAITS: A RETURN TO CULTURE AND PERSONALITY?

Throughout the history of psychology, the idea that people within certain cultures possess enduring dispositional differences has fallen in and out of favor over time, with early attempts to portray "national character" suffering from serious methodological flaws (for a review, see Levine, 2001). Currently, there is a revival of interest in understanding the links between culture and personality (Church, 2001; McCrae, 2000). In the case of the Big Five traits, it seems probable that certain biases and measurement errors of individual assessment devices reduce the accuracy of mean-level portrayals of national personality. Based on classic test theory (Nunnally & Bernstein, 1994), this error likely attenuated the convergent correlations observed between the BFI and related measures. In that context,

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the general level of agreement we found among personality trait measures may provide a reasonable justification for taking the national trait scores of the respective measures and finding an overall Big Five profile for individual nations. Moreover, it seems likely that these biases and errors would be less damaging to the averaged ranking of nations across multiple Big Five instruments. Consequently, we created national rankings on each of the Big Five dimensions according to the BFI and the NEO-PI-R and by averaging across the BFI and NEO-PI-R (e.g., if Nation A is first on Extraversion according to the BFI and Nation A is third on Extraversion according to the NEO-PI-R, this would result in an average ordinal ranking of second for Nation A on Extraversion). In so doing, we uncovered several distinctive patterns and geographic regularities in personality traits across cultures.

For example, South American and European countries tended to occupy the top ordinal positions of the openness dimension, with Chile ranking in first place among all cultures of the ISDP (detailed rankings are available from the authors). On the other hand, the bottom of the openness rankings belonged to mostly East Asian cultures, such as Hong Kong, Japan, South Korea, and Taiwan. In other words, according to BFI-based Big Five rankings, people from South America and Europe are more open than are people from East Asian cultures about their surrounding world and themselves and are more willing to entertain novel ideas and unconventional values. Rankings on other Big Five dimensions produced similar kinds of contrasts, such as the finding that people from African cultures tended to be low in anxiety and depression (i.e., low in neuroticism).

Some of these personality rankings are in a sharp contrast with the national stereotypes that people have about their own country or other nations (Peabody, 1985; Terracciano et al., 2005). However, to our knowledge no convincing evidence has demonstrated that beliefs about national character are, despite their wide adoption and resistance to change, entirely veridical. Rather, they may simply be examples of collectively shared myths and empirically there may be no distinctive national character (McCrae, 2001). Often, real differences in means and rankings are too small to be noticed by the naked eye, especially compared to the interindividual variation inside each culture, which almost always considerably exceeds the former. Even experts of cross-cultural psychology find it difficult when asked which personality factor is lowest among Hong Kong Chinese and South Koreans but highest among Norwegians and Americans. In one study, eight prominent cross-cultural psychologists were unable to identify these factors at a better than chance level (McCrae, 2001).

It is possible, of course, that the cross-cultural trait differences, measured by personality instruments such as the BFI and the NEO-PI-R, do not reflect people's enduring dispositions to think, feel, and behave in certain ways but are instead culturally endorsed styles of responding to personality questionnaires (Johnson, Kulesa, & Cho, 2005; Smith, 2004; van Herk, Poortinga, & Verhallen, 2004). As a general proposition, however, we believe this is unlikely to be the case. Personality trait measures have been shown to possess five major dimensions not only based on individual responses but also from group data, where each culture was represented as a single subject by their mean scores (McCrae, 2001). In other words, if cultural mean scores represent little other than a response style or bias, it would be unlikely for their cross-cultural correlational manifold and exact structure to be equivalent to that derived from individual data. No one has proposed or elaborated a theory of response biases with five interpretable, orthogonal factors. We would argue that a more realistic explanation is that response styles play a role in self-reported personality but are largely confounded with "true" Big Five personality indicators.

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LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

One of the main challenges for cross-cultural personality psychology in the future will be to separate out those factors—including biases, translation inadequacies, and response styles—that covary with substantial personality differences but themselves can also affect the mean trait scores of nations (Church & Lonner, 1998). Biases and different response styles, provided that they exist, are by themselves valuable sources of information about cross-cultural differences (Heine et al., 2002; Johnson et al., 2005; Tsai, Knutson, & Fung, 2006). For the construction of truly universal and cross-culturally transportable personality instruments, however, it will be necessary to measure these biases and response styles to take them into account and improve the construction of culture-fair measuring instruments.

With this perspective in mind, the observed cross-cultural differences in BFI Conscientiousness may have been detrimentally confounded by different response styles. It is perhaps not entirely surprising that Americans presented themselves as highly conscientious, as they are known for working longer hours than many other cultures (Peabody, 1985). However, it seems less obvious why individuals from Ethiopia, Tanzania, and Zimbabwe would end up occupying the highest places in the list of the most conscientious nations (as compiled by rankings of BFI and NEO-PI-R scale scores). It is equally surprising to see Chinese, Korean, and Japanese people in the very bottom of the same list. It seems unlikely that most people would think of individuals from these cultures as extremely undisciplined and weak willed—a profile indicative of low conscientiousness.

One possible explanation is that conscientiousness is estimated with respect to cultural norms. That is, certain norms may establish how punctual, strong-willed, and reliable people are expected to be in different cultures. Suppose, for example, that there are different cultural standards for being organized, purposeful, and achievement oriented. Let us imagine a culture where these standards are set extremely high and almost every effort falls short of these almost compulsive demands. Compared with these standards, almost everyone is forced to report on a self-report scale that he or she is less organized and determined than is generally the case in this particular culture. Perhaps Japan and Korea are prototypical examples of this type of cultural response bias. Japanese is, for example, a unique language having a special word referring to death from overwork (*karoshi*), and in Korea unexpected natural death has become the leading compensated work-related cause of death (Park et al., 1999).

In contrast, in many other cultures, prudence, dutifulness, and achievement striving are not emphasized as cultural norms. Nobody expects themselves or others to be extremely punctual and self-disciplined and to plan their action with caution and consideration. Instead, nearly every achievement might surpass relatively modest expectations and could be regarded in these cultures as an act of strong will and determination. If this explanation is valid, we might speculate that in Ethiopia, Tanzania, and Zimbabwe—three of the top conscientiousness countries in the ISDP set of nations—the cultures have developed a rather different suite of norms concerning conscientiousness than have been developed in Japan, Hong Kong, or Korea.

This type of norm-related explanation is not uncommon (Heine et al., 2002) and has been used to explain another paradox concerning suicide and well-being. Suicide rates, it turns out, tend to be higher in those nations that rank high on subjective well-being (Inglehart, 1990). To resolve the inconsistency that happy people are more prone to suicide, it was proposed that suicide rates do not reflect the overall happiness but instead are affected by cultural norms. Those cultures in which suicide is most widespread tend to

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have the strongest norms of describing oneself as happy. Conceivably, being deeply unhappy in a society where everybody is expected to be happy is even more unbearable than it would be in a society where misery is not so far from the norm (Inglehart, 1990, p. 245). Without an independent measure of cultural norms, this explanation must remain relegated to the status of plausible speculation. Still, this analysis serves as an example of further studies that could be stimulated by the results reported in this study.

One final limitation that should be mentioned involves the representativeness of our ISDP samples. For some nations, ISDP samples included both college students and community members. However, most nations were represented only by college student samples. This form of sampling can reduce the number of confounds across nations by restricting all participants to college-age individuals who have completed the equivalent of a grade school education. On the other hand, college student samples are unrepresentative of national populations, and the degree of this unrepresentativeness can vary across cultures. Indeed, African students from Botswana, the Democratic Republic of the Congo, Ethiopia, Morocco, South Africa, Tanzania, and Zimbabwe may constitute subportions of their cultures that are especially elite compared to college students in the United States and Western Europe. The same also may be true of some of our South American, Eastern European, Middle Eastern, and South and Southeast Asian samples. Future research in which truly representative samples from a wider range of cultures will help to more accurately document national trends and variations in personality dispositions.

The limited focus of the current study leaves many potentially important questions unanswered. Future researchers may profit from relating the current trait profiles to other national variables, including additional socioeconomic indicators, beliefs, and values. Additional analyses looking to the natural grouping or clustering of specific Big Five traits and the reporting of trait-specific similarity indexes across nations are also of potential interest for the future.

CONCLUDING REMARKS

This study had three primary objectives. First, we examined whether the factor structure of the English BFI fully generalized across diverse forms of human culture. As part of the ISDP, the BFI was translated into 29 languages and administered to samples from 56 nations. We found that the five-dimensional structure of the BFI was highly replicable across all the major cultural regions of the world. Results also indicated that the factor scales possessed high levels of internal reliability across all cultures.

The second objective was to evaluate the validity of nation-level BFI trait profiles. We found that BFI trait levels were reliably related to national profiles previously reported in the literature (e.g., from the NEO-PI-R), particularly when issues of sampling and acquiescence are addressed. Importantly, these findings provided the first cross-cultural and cross-instrument validity evidence for the personality dimensions of Agreeableness, Conscientiousness, and Openness. We also found that nation-level personality profiles provided by different Big Five measures converged in their relationships with key external criteria, such as sociosexuality and self-esteem.

A third objective was to document the worldwide distribution of personality traits as measured by the BFI. We found several patterns across cultures, including that people from the geographic regions of Africa and East Asia were significantly different in conscientiousness from those inhabiting other world regions, with the former being more conscientious and the

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latter reporting less conscientiousness than people from other world regions. In sum, our ISDP findings, though limited in many ways, can be taken as an incremental addition to the growing body of evidence that the Big Five dimensions of personality can be reliably measured across diverse human cultures. The BFI, in particular, may be especially useful for future researchers looking for a brief measure of basic personality traits. The BFI profiles generated by the ISDP may also prove useful as a baseline against which future large-scale studies of personality can be compared.

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